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United States
Department of
Agriculture

Forest Service

Tongass National Forest

R10-MB-484a

July 2003



Licking Creek Timber Sale

Record of Decision





United States
Department of
Agriculture

Forest
Service

Alaska Region
Tongass National
Forest

648 Mission Street
Ketchikan, AK 99901
907-225-3101
FAX 907-228-6215

File Code: 1950

Date: July 30, 2003

Dear Reviewer:

Enclosed is your copy of the Record of Decision (ROD) for the Licking Creek Timber Sale project area on the Ketchikan-Misty Fiords Ranger District, Tongass National Forest. The ROD documents my final decision on the Selected Alternative, and the facts considered in reaching the decision. The effective date of implementation for the decision and the Notice of Rights of Appeal are also specified in the ROD.

Copies of the ROD and the Final EIS have been directly mailed to those people who requested to be on the project mailing list. Additional copies of this Record of Decision and the Final EIS are available for review at Forest Service offices throughout the Tongass. If you would like to request additional copies to be sent to you, contact the Ketchikan-Misty Fiords Ranger District at 907-225-2148.

As the Forest Supervisor, I am responsible for this decision. I want to thank those of you who took the time to review and comment on the Draft Environmental Impact Statement. Your interest in the management of the Tongass National Forest is appreciated.

Sincerely,

THOMAS PUCHLERZ
Forest Supervisor



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Record of Decision

Record of Decision

Record of Decision

Licking Creek Timber Sale

USDA Forest Service

Ketchikan-Misty Fiords Ranger District

Tongass National Forest

Alaska Region

Ketchikan Gateway Borough

Introduction

This Record of Decision (ROD) documents my decision to select an alternative from the Licking Creek Timber Sale Final Environmental Impact Statement (Final EIS).

The Licking Creek project area is northeast of the communities of Ketchikan, Saxman and Metlakatla in the southeast corner of Alaska. It is located on Revillagigedo (Revilla) Island, and occupies approximately 14,424 land acres on the eastern shore of Carroll Inlet. Currently, it is accessible only by water or air. National Forest System lands encompass the majority of the project area, with a small private holding in the southern portion. Cape Fox Corporation holds industrial timberlands well outside of the project area, to the southwest across Carroll Inlet. The vicinity map (Figure 1-1 in Chapter 1 of the Final EIS) shows the location of the project area and other land ownerships in the area.

The Selected Alternative achieves Forest Plan goals for the Licking Creek project area, while considering impacts to other resource users.

This decision includes the specific location and design of timber harvest units and roads, access management, and resource protection measures to be implemented. Timber from this project would be sold in one or more sales.

Decision

This Record of Decision documents my decision to implement activities in the Licking Creek Timber Sale project area. My decision encompasses the following:

- the location and method of timber harvest, road construction, log-transfer facilities, and silvicultural practices,
- access management measures (road closures associated with the timber sale project), and
- mitigation measures and monitoring requirement.

It is my decision to choose Alternative 4, with modifications, as the Selected Alternative for implementation in the Licking Creek Timber Sale project area.

This decision is based on the environmental analysis in this EIS including agency, tribal, and public comments received during the comment period on the Draft Environmental Impact Statement. This decision meets the Purpose and Need for the project; is consistent with the Tongass National Forest Land and Resource Management Plan Record of Decision; and is responsive to issues raised during scoping, to information gathered during the environmental analysis, and to public and agency comments on the Draft EIS.

Alternative 4, hereafter referred to as the Selected Alternative, was identified as the Preferred Alternative in the Draft EIS. The following modification was made to Alternative 4.

Unit 39 (analyzed in Alternatives 3 and 5) was added to improve the economics of helicopter-yarding Units 35 and 40. These three units are located together in one geographic area, and by combining the units we are better able to amortize the mobilization costs over more volume. The addition of Unit 39 to Alternative 4 will result in a more logical helicopter harvest unit, reduce the average yarding distances for the helicopter unit, and reduce the costs of helicopter yarding. Standards and guidelines associated with high-value marten habitat will be implemented to mitigate the increased size of the helicopter harvest unit. Leave trees that meet the Marten Standard and Guideline will be left within the unit and should not affect the operations of the helicopter harvest system. The costs associated with leaving designated leave trees within Units 35 and 39 should not increase helicopter-yarding costs.

Background

The proposed project is a component of the overall timber sale program on the Tongass National Forest. Timber sales are allowed by the Forest Plan in order to maintain a supply of timber from National Forest System lands for Southeast Alaska.

The National Environmental Policy Act (NEPA) process for the Licking Creek Timber Sale project began when a Proposed Action was published in the *Federal Register* as a Notice of Intent to Prepare an Environmental Impact Statement on July 6, 2001.

After the notice in the *Federal Register*, public scoping, data collection and analysis, and documentation continued. A Draft Environmental Impact Statement (Draft EIS) was distributed in December of 2002. Public review and comments on the Draft EIS were collected until January 21, 2003. Each of the comments have been reviewed and responded to, and the EIS revised accordingly.

When the Draft EIS was published, five alternatives were considered in detail; I identified Alternative 4 as my Preferred Alternative. A sixth alternative was added to the Final EIS, in response to public comment.

In January 2001, the Forest Service adopted a national Roadless Area Conservation Policy, which prohibits most road construction and timber harvest in roadless areas. This timber sale project avoids timber harvest and road construction in any roadless area identified in the Roadless Policy.

In *Sierra Club v. Lyons* (J00-0009CV(JKS)), the U.S. District Court, District of Alaska directed the Forest Service to prepare a supplemental environmental impact statement (SEIS) that evaluates and considers roadless areas within the Tongass for recommendation as potential wilderness areas. The Notice of Availability for the Final SEIS and Record of Decision appeared in the Federal Register on March 7, 2003.

The roadless inventory that was prepared for the 1997 Forest Plan was updated to support the SEIS (Final SEIS Alternative 1 Maps). The Licking Creek project does not propose any timber harvest or road construction in any Inventoried Roadless Area.

The Forest Service Transportation Policy requires that an area-specific roads analysis be completed, and a determination of need for amendment or revision of the Forest Plan be made, if any roads are to be constructed or reconstructed in inventoried roadless or contiguous unroaded areas, until a Forest-wide roads analysis has been completed (FSM 7712.16(c)). The Tongass-wide roads analysis (for Maintenance Levels 3, 4, and 5) was completed in February 2003. The project-level analysis has been completed for the North Shoal Cove LTF transportation system, and can be found in the Licking Creek Timber Sale project planning record.

Purpose and Need

The Purpose and Need for the Licking Creek Timber Sale is to respond to the following goals and objectives identified by the Forest Plan and to help move the project area towards desired future conditions described in that plan.

- Manage the timber resource for production of saw timber and other wood products from suitable timber lands made available for timber harvest, on an even-flow, long-term sustained-yield basis and in an economically efficient manner.
- Seek to provide a timber supply sufficient to meet the annual market demand for Tongass National Forest timber, and the market demand for the planning cycle.
- Provide a diversity of opportunities for resource uses that contribute to the local and regional economies of Southeast Alaska.
- Support a wide range of natural resource employment opportunities within Southeast Alaska's communities.

Appendix A of the Final EIS described how the Licking Creek Timber Sale fits into the overall timber program for the Tongass National Forest. Further clarification can be found in the next section regarding this project's relationship to the Forest Plan.

The alternatives considered are possible approaches to meeting the Purpose and Need. The environmental analysis documented in the Final Environmental Impact Statement (Final EIS) for the Licking Creek Timber Sale project was conducted under the guidelines of the National Environmental Policy Act (NEPA) process. The Final EIS was designed to help insure that I make the most informed decision possible for this proposed project.

Section 101 of the Tongass Timber Reform Act of 1990 (TTRA) directs the USDA Forest Service "... to the extent consistent with providing for the multiple use and sustained yield of all renewable forest resources, seek to provide a supply of timber from the Tongass National Forest which (1) meets the annual market demand for timber from such forest and (2) meets the market demand from such forest for each planning cycle." Section 101 of the TTRA specifies that Forest Service efforts to seek to meet market demand are subject to appropriations,

National Forest Management Act requirements, and other applicable laws. Providing a timber supply from the Tongass for sustained local wood products industry employment and related economic and social benefits helps meet the Forest Plan objective of supporting a wide range of natural-resource employment opportunities within Southeast Alaska's communities.

Highlighted Features of the Selected Alternative

The Selected Alternative will harvest timber from approximately 799 acres in the project area (Table R-1). This harvest will provide an estimated 17 million board feet of sawlog and utility volume based on estimates of unit volume (actual cruised volume may vary). Design features and site-specific mitigation measures for the harvest units are described in detail on the unit cards in Appendix 1 of the Record of Decision.

There will be 3.13 miles of new classified roads designed for long-term use, as well as 2.36 miles of temporary roads and road reconstruction. An existing log transfer facility at Shoal Cove will be used for timber transport. Following timber harvest, all new classified roads will be closed (Maintenance Level 1) and put in storage for future use. The temporary roads will be decommissioned (closed permanently). Decommissioning will include activities that result in stabilization and restoration of roads not needed for long-term management to a more natural state. New roads will not be constructed within any inventoried roadless areas.

The Selected Alternative will manage the roads, including site-specific mitigation, as displayed in the road cards shown in Appendix 2 of the Record of Decision. The project is consistent with the Forest Transportation Policy.

This Record of Decision incorporates mitigation measures to reduce or eliminate adverse environmental effects of timber harvest and road construction specified in the Selected Alternative. These mitigation measures are listed in Appendix 1 and 2 of the ROD (Unit and Road Cards), and in Chapter 2 of the Final EIS. Chapter 2 also contains the project-level implementation and effectiveness monitoring planned to determine how well resource management objectives have been met.

Table R-1
Harvest Objectives and Practices of the Alternatives including Selected Alternative

Category	Unit of Measure	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Selected Alt. (Mod Alt. 4) ^{4/}	Alt. 5	Alt. 6
Silvicultural System								
Even-aged	acres	0	253	551	784	793	737	214
Uneven-aged	acres	0	0	22	6	6	28	0
Harvest Volume ^{1/}	CCF (MMBF)	0	10,709 (5.4)	23,832 (11.9)	33,556 (16.8)	33,926 (17)	32,261 (16.1)	11,118 (5.6)
Harvest System								
Conventional (Cable)	CCF	0	5,293	12,537	22,964	22,964	8,421	10,287
Shovel	CCF	0	303	711	4,392	4,392	642	831
Helicopter	CCF	0	5,113	10,584	6,200	6,570	23,198	0
Roads								
New construction - classified	miles	0	0.67	1.06	3.13	3.13	0	0
New construction - temporary	miles	0	0.83	1.11	2.36	2.36	0	0
Reconstruction	miles	0	4.11	4.11	1.65	1.65	4.11	0
Economics								
Average harvest cost/CCF ^{1/}	\$/CCF	0	169.52	153.94	130.64	130.64	162.78	89.76
Direct income generated ^{2/}	millions \$	0	1.26	2.80	3.95	3.95	3.80	1.30
Direct job years created ^{3/}	jobs/year	0	28	63	89	89	85	29

^{1/} For optional removal of utility logs

^{2/} Expected stumpage value at current market conditions, NEAT, Dec. 2001. Does not include possible bid premium.

^{3/} Based on 5.28 direct jobs per MMBF; job year/harvest ratio from Forest Plan

^{4/} Selected Alt. includes the addition of a 9-acre unit to Alternative 4; this unit will be helicopter yarded.

Source: S. McCoy, 2003

Record of Decision

Table R-2
Comparison of Alternatives including Selected Alternative

Issues	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Selected Alt. (Mod Alt. 4)	Alt. 5	Alt. 6
Issue 1: Timber Economics							
Harvest Volume CCF (MMBF)	0	10,709 (5.4)	23,832 (11.9)	33,556 (16.8)	33,926 (17)	32,261 (16.1)	11,118 (5.6)
Average harvest cost ^{1/} (\$/CCF)	0	169.52	153.94	130.64	130.64	162.78	89.76
Expected bid value \$ (parenthesis = deficit)	0	(362,139)	(366,886)	278,578	278,578	(753,807)	566,037
Direct income generated (millions \$)	0	1.26	2.80	3.95	3.95	3.80	1.30
Direct job years created ^{2/}	0	28	63	89	89	85	29
Issue 2: Wildlife Habitats ^{3/}							
Reduction in potential deer habitat from existing conditions ^{3/}	0	2%	4%	9%	9%	5%	3%
Cumulative reduction in potential deer habitat since 1954 ^{3/}	33%	34%	36%	39%	39%	36%	35%
Reduction in marten high-value habitat capability ^{3/} (from existing)	0	4%	11%	14%	14%	15%	5%
Post-harvest open road density VCU 7460 (mi/sq. mi)	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Post-harvest open road density WAA 406 (mi/sq. mi)	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Issue 3: Watersheds & Fish Habitat							
Class II stream crossings (reconstructed) ^{4/} (2 bridges, 1 culvert)	0	3	3	3	3	3	0
Class III stream crossings (new) ^{4/}	0	0	1	2	2	0	0
Class IV stream crossings (new) ^{4/}	0	0	0	2	2	0	0
Issue 4: Transportation							
Estimated cost of road construction and maintenance (\$)	0	553,100	660,150	1,078,900	1,078,900	326,000	140,000
Possible significant effects from roads on soils and water quality	No	No	No	No	No	No	No
Other Concerns							
Possibility of adverse effect on high-vulnerability karst	No	No	No	No	No	No	No
Number of proposed harvest units visible from viewpoints	0	2	5	9	9	9	4
Significant possibility of significant restriction on subsistence use	No	No	No	No	No	No	No

1/ For optional removal of utility logs.

2/ Based on 5.28 direct jobs per MMBF; job year/harvest ratio from Forest Plan

3/ Wildlife effects are reported for the project area, unless otherwise noted.

4/ All new and reconstructed stream crossings would meet standards to provide fish passage.

Source: K. O'Connor, 2002, 2003

Reasons for Decision

In making my decision, I considered the issues raised during the development and scoping of this project, the Forest Plan Standards and Guidelines relevant to the project area, and the competing interests and values of the public. Many public and agency opinions were expressed during the analysis. These comments have helped me make a better-informed decision. I have considered all views that have been expressed, and have incorporated them where feasible and consistent with the Purpose and Need of the project.

The Selected Alternative provides the most beneficial mix of resources for the public, within a framework of existing laws, public needs, and the capabilities of the land, while meeting the stated Purpose and Need for this project, which is to respond to the goals and objectives in the Forest Plan and move the project area toward desired future conditions described in that Plan. Specific reasons for the decision include:

- My decision to implement this Selected Alternative conforms to the Forest Plan and sound National Forest System management. I have considered the need to help provide a sustained level of timber supply to meet annual and Forest Plan planning cycle market demand, and to provide diverse opportunities for natural resource employment, consistent with multiple use and sustained yield of all renewable forest resources. The estimated 17 MMBF of timber made available through the Selected Alternative would best help meet Southeast Alaska timber supply needs by offering the greatest volume and providing the greatest number of jobs, among the alternatives.
- The land use designations (LUDs) for the project area in which timber harvest is proposed include Timber Production (79 percent) and Modified Landscape (19 percent). The timber harvest proposed in the Selected Alternative meets the goals of these LUDs, which primarily include providing a sustained timber supply and maintaining differing successional stages of timber stands. In addition, the Modified Landscape LUD recognizes scenic values of suitable timberlands and modifies timber harvest accordingly.
- The Selected Alternative considers road maintenance costs by closing (putting in storage) classified roads and decommissioning all temporary roads following harvest activities.
- Stream protection measures and Best Management Practices are expected to minimize effects on fish habitat and water quality.
- The Selected Alternative uses primarily even-aged harvest systems with a small acreage of uneven-aged systems. These prescriptions are based on consideration of many factors, which are described in Chapter 3 and on a unit-by-unit basis in the unit cards (Appendix 1 of the ROD).

Issues

In making my decision, I considered issues identified during the planning process.

Issues for the Licking Creek Timber Sale project were identified through public and internal scoping and further defined after analyzing comments on the Draft EIS and testimony from the subsistence hearings. The issues were identified early in the process. In the following summary, I disclose how the Selected Alternative addresses each of the significant issues. Table 2-5 and Chapter 3 of the Final EIS supplement the following discussion and provide a comparison of the alternatives.

Issue 1: Economics

There is a concern about the economic viability of timber sales, and how the timber industry contributes to the overall economic health of the Ketchikan area and Southeast Alaska.

The Selected Alternative provides an estimated 17 MMBF of timber that will contribute to the Forest Service's attempt to seek to meet market demand in a manner consistent with the Tongass Land and Resource Management Plan and the standards and guidelines for all resources. Timber from this project is needed as a component of the timber sale schedule to provide timber to industry in an even flow over the 10-year planning cycle. This alternative will provide an estimated 89 direct (timber industry-related) jobs to the local communities.

Issue 2: Wildlife Habitat

There is a concern that the cumulative effects of past, present, and proposed timber harvest may reduce habitat for deer and other wildlife, leading to reductions in deer and wolf populations and possibly affecting opportunities to hunt deer in the project area.

The Selected Alternative responds to these concerns by maintaining high-value deer winter habitat capability above the minimum recommended density to maintain wolf populations in the project area. The number of deer will remain adequate to sustain expected hunting levels and subsistence use. Post-harvest open road densities will be within the recommended levels for wolves, but above the recommended maximum densities for marten. However, these open roads are not connected to any communities and motor vehicle traffic is light, and the road densities should not adversely affect marten. After harvest activities are completed, all new project roads will be closed.

Issue 3: Watersheds and Fish Habitat

There is a concern that the cumulative effects of past, present and proposed timber harvest may impact water quality and fish habitat in the project area.

The Selected Alternative proposes no new stream crossings on Class I or II streams. Three existing Class II crossings (two bridges and one culvert) will be reconstructed. Anadromous fish (salmon) habitat within the Licking Creek project area is minimal, and the project area watersheds are, generally, unproductive for these species. With the application of Forest Plan Standards and Guidelines, including those for riparian areas, risks to freshwater and marine resources and Essential Fish Habitat will be minimized, and no significant adverse effects are anticipated to occur.

Issue 4: Transportation

There is a concern that the addition of new roads to our open road system may exceed our current and future capability for road maintenance.

In order to obtain an affordable road system with all roads properly maintained, the Selected Alternative closes all new roads after completion of timber harvest and silvicultural activities. Forest Plan Standards and Guidelines and Best Management Practices (BMPs) will be applied to all road construction activities. New roads will be located to minimize crossing of karst features, wetlands, and slopes and soils at high risk for mass movement. Application of mitigation and BMP measures will minimize erosion of road surfaces, and new stream crossings will be designed to minimize sediment delivery to streams. No new roads or other activities are proposed within any inventoried roadless areas.

Public Involvement

Public involvement has been instrumental in the identification and clarification of issues for this project. This has been helpful in the formulation of alternatives and has assisted me in making a more informed decision for the Licking Creek Timber Sale project. Open meetings, *Federal Register* notices, newspaper ads, an open house and a subsistence hearing, government-to-government consultation, and the Tongass National Forest Schedule of Proposed Actions, were used to solicit input for this project.

Notice of Intent (NOI)

A Notice of Intent was published in the *Federal Register* on July 6, 2001, when it was decided that an EIS was to be undertaken for the project.

Public Mailing

On November 16, 2000, a scoping letter providing information and seeking public comment was mailed to 385 individuals and groups that had previously shown interest in Forest Service projects in Southeast Alaska. This included Federal and State agencies, Alaska Native groups, municipal offices, businesses, interest groups, and individuals. We received 11 responses to this initial mailing. On June 4, 2001, a letter displaying the significant issues and preliminary alternatives was mailed to 360 individuals and groups. We received 11 additional responses to this second mailing.

Public Meetings / Local News Media

In January 2002, the Forest Service began inviting public participation in monthly project meetings, in which IDT members discuss the current status of all planning projects, including Licking Creek. Display ads for these monthly meetings were published in the *Ketchikan Daily News*.

Consultation with Tribal Governments

Government-to-government consultation with federally recognized tribal governments and meetings with traditional tribal governments have taken place as follows:

- Ketchikan Indian Corporation (KIC) - July 20, 2001
- Saxman Tribal Council – August 13, 2001
- Metlakatla Indian Community (MIC) – November 1, 2001
- Organized Village of Saxman – November 20, 2001
- Metlakatla Indian Community (MIC) – November 27, 2002 (telephone conversation)
- Ketchikan Indian Corporation (KIC) – December 9, 2002
- Organized Village of Saxman – December 17, 2002
- Traditional tribal representatives for Tongass Tribe and Saxman

Tribal concerns were considered in the environmental analysis of effects of the alternatives. However, consultation with tribal governments does not imply that they endorsed the Selected Alternative or any of the alternatives.

Draft EIS

Availability of Draft EIS for Public Comment

Availability of the Draft EIS was announced on December 6, 2002, both in the *Federal Register* and through legal notice published December 9, 2002 in the *Juneau Empire* (the newspaper of record) and the *Ketchikan Daily News*. These notices started a public comment period, which began December 6, 2002. The 45-day comment period ended January 21, 2003. The Draft EIS document was also mailed to Federal and State agencies, Native and municipal offices, and others who requested them.

Public Meeting

After the Draft EIS was published, a public information meeting/open house was held in Ketchikan on January 7, 2003 to gather additional comments on the project.

Subsistence Hearing

Following publication of the Draft EIS, a subsistence hearing was held in Saxman on January 8, 2003. Testimony from that hearing is included as Appendix C of the Final EIS.

Analysis and Incorporation of Public Comments

Public comments have been analyzed and incorporated into the Final EIS. For an analysis of public comment and the Forest Service response, see Appendix B of the Final EIS.

Publication of the Final Environmental Impact Statement

The Notice of Availability of the Final EIS has been published in the *Federal Register* and through legal notices in the *Juneau Empire*, the newspaper of record and in the *Ketchikan Daily News*. The legal notice in the newspaper of record initiates a 45-day appeal period. Copies of the Final EIS have been mailed to Federal and State agencies, federally recognized tribal governments, municipal offices, and to those who requested them or responded to the Draft EIS. The Final EIS is also available at the Ketchikan-Misty Fiords Ranger District Office

Final EIS

Coordination with Other Agencies

From the time scoping was initiated, consultation with all interested State and Federal agencies has occurred.

Letters were received from the Alaska Dept. of Fish and Game (September 25, 2001) and U.S. Fish and Wildlife Service (September 17, 2001) that concurred with the existing location of the small Old Growth Reserves in VCU 7460, as they were designated for the Sea Level Timber Sale. The Sea Level project area encompassed the Licking Creek Timber Sale project area.

The Alaska Coastal Management Plan (ACMP) consistency review process was initiated upon publication of the Draft EIS, through the Alaska Department of Natural Resources, Office of Project Management and Permitting, formerly the State of Alaska Division of Governmental Coordination. A Project Clarification letter was submitted after analyzing responses to comments on the Draft EIS. The State has concurred with our determination.

A Biological Assessment was prepared and sent to the U.S. Fish and Wildlife Service as part of the Section 7 consultation process under the Endangered Species Act. An Essential Fish Habitat determination was provided to National Marine Fisheries Service. The National Marine Fisheries Service concurred with our findings. The U.S. Department of Interior (for the U.S. Fish and Wildlife Service) reported that the project area does not provide valuable habitat and had no comments on the Draft EIS.

The State Historic Preservation Officer has been consulted, in accordance with Section 106 of the NHPA and 36 CFR Part 800, and concurred that no National Register eligible sites would be affected by the proposed activities. No effects on known significant cultural resources are anticipated.

The Final EIS identifies the agencies that were informed of and/or involved in the planning process (see List of Agencies, Organizations, and Individuals Sent Copies of this Statement in Chapter 4).

Alternatives Considered in Detail

Five alternatives were considered in detail in the Final EIS. Each action alternative is consistent with the Forest Plan. For a complete description of these alternatives, refer to Chapter 2 of the Final EIS.

Alternative 1

This No-action Alternative represents the existing conditions in the Licking Creek Timber Sale project area, and serves as the baseline against which the effects of the other alternatives are measured.

This alternative proposes no new timber harvest or road construction. It does not preclude timber harvest from other areas, or from Licking Creek at some time in the future. The map for Alternative 1 shows the land use designations and VCU for the project area.

This alternative would address several other concerns by having no adverse effect on old-growth associated wildlife or watersheds. There would be no change in existing recreation opportunities.

This alternative was not selected for the following reasons:

- It would not provide for an economic timber supply or any opportunity for timber-related employment, as described in the Purpose and Need (Final EIS Chapter 1).
- It would not provide a diversity of opportunities for resource uses that contribute to the local and regional economies of Southeast Alaska (Forest Plan, page 2-3).
- Environmental analysis showed that the desirable outputs of the Purpose and Need could be achieved without unreasonable effects to the ecological and human environments. These effects are described under the reasons for this decision and in Chapter 3 of the Final EIS.

Alternative 2

This alternative was designed to minimize potential and cumulative effects to watersheds and fish habitat (Issue 3). A low level of timber harvest was dispersed across the watersheds in the project area, and areas of particular concern (e.g. Unit 8 and Unnamed Watershed 19) were avoided.

The timber volume proposed for harvest in Alternative 2 is 5.4 MMBF (10,709 CCF) on 253 acres of National Forest System lands. The project would provide opportunities for timber harvesting by local operators. It would convert 253 acres of old-growth stands to an even-aged condition. Timber would be removed by helicopter, cable and shovel logging. This alternative would provide 28 direct job years.

Alternative 2 includes 0.67 mile of new (classified) road construction, 0.83 mile of temporary road, and reconstruction of 4.11 miles of existing road on National Forest System land, to move logs to the existing log transfer facility at Shoal Cove. After harvest activities are completed, all new project roads would be closed. Roads would be maintained at Maintenance Level I (closure), where custodial maintenance is performed to protect the road investment and reduce impacts to adjacent resources to an acceptable level. Non-motorized travel would not be restricted.

This alternative was not selected for the following reasons:

- It is not economically feasible in the current market conditions. Utilizing measures such as export of red cedar could improve economics but the advertised rates would still be negative.
- This alternative provides the least number of direct job years (28) of the action alternatives.

- Environmental analysis showed that additional volume could be harvested without unreasonable effects to the ecological and human environments. These effects are described under the reasons for this decision and in Chapter 3 of the Final EIS.

Alternative 3

This alternative was designed to minimize potential and cumulative effects to critical deer winter range (Issue 2), by shifting timber harvest away from south-facing slopes and lower elevation habitats to other areas.

The timber volume proposed for harvest in Alternative 3 is approximately 11.9 MMBF (23,832 CCF) on 573 acres of National Forest System lands. The project would provide opportunities for timber harvesting by local operators. It would convert 551 acres of old-growth stands to an even-aged condition, and convert 22 acres of old-growth stands to an uneven-aged condition. Timber would be removed by helicopter, cable and shovel logging. This alternative would provide 63 direct job years.

Alternative 3 includes 1.06 miles of new (classified) road construction, 1.11 miles of temporary road, and reconstruction of 4.11 miles of existing road on National Forest System land, to move logs to the existing log transfer facility at Shoal Cove. After harvest activities are completed, all new project roads would be closed. Roads would be maintained at Maintenance Level I (closure), where custodial maintenance is performed to protect the road investment and reduce impacts to adjacent resources to an acceptable level. Non-motorized travel would not be restricted.

This alternative was not selected for the following reasons:

- It is not economically feasible in the current market conditions. Utilizing measures such as export of red cedar could improve economics but the advertised rates would still be negative.
- Environmental analysis showed that additional volume could be harvested without unreasonable effects to the ecological and human environments. These effects are described under the reasons for this decision and in Chapter 3 of the Final EIS.

Alternative 4

This alternative was identified as the initial agency proposal when scoping began, and in the Draft EIS. Alternative 4 is designed to respond to the issue of timber for the local economy (Issue 1). This alternative will provide an economic timber sale with a moderate level of timber volume, not the maximum volume currently available in the project area, and balance timber harvest with effects on other resources.

The timber volume proposed for harvest in Alternative 4 is approximately 16.8 MMBF (33,556 CCF) on 790 acres of National Forest System lands. It will convert 784 acres of old-growth stands to an even-aged condition, and convert 6 acres to an uneven-aged condition. Timber will be removed by helicopter, cable and shovel logging. This alternative would provide 89 direct job years.

Alternative 4 includes 3.13 miles of new (classified) road construction, 2.36 miles of temporary road, and reconstruction of 1.65 miles of existing road on National Forest System land, to move logs to the existing log transfer facility at Shoal Cove. After harvest activities are completed, all new project roads will be closed. Roads will be maintained at Maintenance Level I (closure), where custodial maintenance is performed to protect the road investment and reduce impacts to adjacent resources to an acceptable level. Non-motorized travel will not be restricted.

Alternative 5

Alternative 5 was designed to respond to the issue of new road construction (Issue 4), by conducting all timber harvest from existing roads in the project area and not constructing any new roads.

The timber volume proposed for harvest in Alternative 5 is approximately 16.1 MMBF (32,261 CCF) on 765 acres of National Forest System lands. The project would provide opportunities for timber harvesting by local operators. It would convert 737 acres of old-growth stands to an even-aged condition, and convert 28 acres of old-growth stands to an uneven-aged condition. Timber would be removed primarily by helicopter (72 percent of the volume), but also by cable and shovel logging. This alternative would provide 85 direct job years.

No new road construction is proposed under Alternative 5. It would require reconstruction of 4.11 miles of existing road on National Forest System lands, to move logs to the existing log transfer facility at Shoal Cove. After completion of harvest activities, some existing roads would be maintained at Maintenance Level I (closure), where custodial maintenance is performed to protect the road investment and reduce impacts to adjacent resources to an acceptable level. Non-motorized travel would not be restricted.

This alternative was not selected because:

- It is not economically feasible in the current market conditions. Utilizing measures such as export of red cedar could improve economics, but the advertised rates would still be negative. The primary reason this alternative is deficit is due to the high logging costs associated with helicopter yarding.

Alternative 6

Alternative 6 was designed in response to public comments received on the Draft EIS. This request was for a new alternative that had no helicopter yarding and no new road construction, and that included some additional partial harvest. Partial harvest is almost exclusively done with helicopter-yarding methods; therefore, the silvicultural systems were maintained as primarily even-aged, and units and portions of units requiring either road construction or helicopter yarding to access were dropped.

The timber volume proposed for harvest in Alternative 6 is 5.6 MMBF (11,118 CCF) on 214 acres of National Forest System lands. The project would provide opportunities for timber harvesting by local operators. It would convert all harvested acres of old-growth stands to an even-aged condition. Timber would be removed by cable and shovel logging. This alternative would provide 29 direct job years.

No new road construction or reconstruction is proposed under Alternative 6. Existing roads on National Forest System lands would be utilized to move logs to the existing log transfer facility at Shoal Cove. After completion of harvest activities, some existing roads would be maintained at Maintenance Level I (closure), where custodial maintenance is performed to protect the road investment and reduce impacts to adjacent resources to an acceptable level. Non-motorized travel would not be restricted.

This alternative would be economical over the short-term, due to harvesting timber available from existing roads, conducting no new road construction, and keeping haul distances short. However, the majority of marketable timber remaining in the Licking Creek project area would be in the upper elevations of the watersheds and require extensive road construction to access.

Alternative 6 was not selected primarily because:

- It would preclude future, sustainable timber harvest in the project area and consequently would not meet Forest Plan goals and objectives. Without the inclusion of short-haul timber to amortize the road-building costs, future timber harvest would be precluded under all but the best market conditions. This would not meet the long-term goals in the Forest Plan for sustainable timber production.
- This alternative would provide fewer job years (29) than the Selected Alternative.
- Additionally, environmental analysis showed that additional volume could be harvested without unreasonable effects to the ecological and human environments. These effects are described under the reasons for this decision and in Chapter 3 of the Final EIS.

Environmentally Preferred Alternative

Based on a comparison of the alternatives and the discussion contained within Chapter 3 of the Final EIS, Alternative 1, the No-action Alternative, would cause the least environmental disturbance and is therefore the environmentally preferred alternative of all the alternatives studied in detail. Of the action alternatives, Alternative 6 is the environmentally preferred alternative. It harvests a small amount of timber and has no new road construction.

Alternatives Not Considered in Detail

In addition to the alternatives described above, additional alternatives were suggested during public scoping and in comments received on the Draft EIS. These were considered during the analysis but eliminated from detailed study.

Maximize Timber Harvest: Comments received during public scoping recommended to maximize timber harvest volume from a broad area surrounding the proposed sale area, including portions of the North Revilla Roadless Area 526. Reasons this alternative was eliminated from detailed consideration include: 1) harvest of all marketable timber in the project area would not meet Forest Plan Standards and Guidelines; 2) units within the Inventoried Roadless Area were not available for timber harvest during preparation of the Forest Plan Supplemental EIS and were dropped from consideration early in alternative development; and 3) inclusion of additional units and roads not considered in the proposed action (and not connected to the proposed action) is beyond the scope of analysis for this project.

Partial Harvest, No Helicopter Yarding, and No New Road Construction: Public comment received on the Draft EIS recommended a new alternative that included more partial harvest and eliminated road construction or helicopter yarding. Partial harvest is almost exclusively done with helicopter-yarding methods in Southeast Alaska; therefore, this alternative was not practical to design. In response to this comment, a new alternative, Alternative 6, was designed with no helicopter yarding and no new road construction; the silvicultural systems were maintained as primarily even aged. Alternative 6 is analyzed in detail, with the other project alternatives, in Chapter 3 of this Final EIS.

Mitigation

Mitigation measures are prescribed to avoid, reduce, or eliminate the adverse effects of actions. These measures were applied in the development of the project alternatives, including the Selected Alternative, and in the design of the harvest units and road corridors. The Mitigation Measures section of Chapter 2 of the Final EIS, and Appendix 1 (Unit Cards) of the Record of Decision discusses mitigation measures for all alternatives.

Mitigation measures applicable to the Selected Alternative include measures contained in the Standards and Guidelines of the Forest Plan, and applicable Forest Service Manuals and Handbooks. The Final EIS includes mitigation measures described in Chapter 2 and unit and road cards in Appendices 1 and 2 of the Record of Decision. These measures are adopted as part of this decision and will be implemented. Measures to avoid or lessen adverse environmental effects of the project have been incorporated into the Selected Alternative.

Additional project-specific mitigation measures include protection for a rare plant, *Listera convallarioides*, found on the project area in two locations within Unit 10. The area has been marked off with flagging to be protected during yarding.

Monitoring

A monitoring program is the process by which the Forest Service can evaluate whether the resource management objectives of the final environmental documents have been implemented as specified and whether the steps identified for mitigating the environmental effects were effective. Project-level monitoring is specified in Chapter 2 of the Final EIS. These monitoring items are part of this decision and will be implemented.

Each monitoring item describes the objective of the monitoring, what will be done, how it will be done, and the approximate cost of the monitoring. Monitoring activities may reveal results that deviate from planned effects, in which case corrective actions are prescribed. The Ketchikan-Misty Fiords District Ranger is responsible for ensuring that project implementation, mitigation, monitoring, and enforcement are accomplished as specified in the Final EIS.

Additional project-specific monitoring measures include surveys and monitoring for band-tailed pigeons around Unit 11. Surveys are being made to locate birds and their potential nests in the spring/summer of 2003, and the population will be monitored for 3 years post-harvest to determine if the birds are present and continue to exhibit breeding behavior.

Planning Record

The planning record for this project includes the Draft EIS, Final EIS, Forest Plan and material incorporated by reference, and all materials produced during the environmental analysis of this project. The planning record is available for review at the Ketchikan-Misty Fiords Ranger District.

Findings Required By Law

Several of the laws and executive orders listed in Chapter 1 of the Final EIS require project-specific findings or other disclosures.

National Forest Management Act

The National Forest Management Act (NFMA) requires specific determinations in this Record of Decision: consistency with the Forest Plan and FSM 2410.3, R10 Supp. 2400-2002-1 (5/7/2002), a determination of clearcutting as the optimal method of harvesting, if used, and specific authorizations to create openings over 100 acres in size. Specific information and rationale used to develop unit prescriptions is shown on unit cards, in the planning record, in Chapter 3 of the Final EIS.

The Forest Plan complies with all resource integration and management requirements of 36 CFR 219 (219.14 through 219.27). Application of Forest Plan direction for the Licking Creek Timber Sale project ensures compliance at the project level. Specific NFMA findings pertaining to silvicultural systems are included in Chapter 3 of the Final EIS and the project planning record.

Tongass Land and Resource Management Plan

This decision fully complies with the Forest Plan and FSM 2410.3, R10 Supp. 2400-2002-1 (5/7/2002). The Licking Creek project incorporates all applicable Forest Plan Standards and Guidelines and management area prescriptions as they apply to the project area, and complies with Forest Plan goals and objectives. All required interagency review and coordination has been accomplished; any new or revised measures resulting from this review have been incorporated to the Final EIS.

Clearcutting as the Optimal Method of Harvesting

The Forest Plan (4-96 to 4-97) gives guidance on when to use even-aged management. Clearcutting (an even-aged method) is used in this project to preclude or minimize the occurrence of potentially adverse impacts from windthrow. It is applied where windthrow potential is moderate to high. Clearcutting is also used to minimize mistletoe infestations, logging damage or other factors affecting forest health. Specific information and rationale for use of this prescription is shown in the Silvicultural prescriptions, which are a part of the project planning record, in the introduction to the Unit Cards, Appendix 2 of this ROD, and in Chapter 3 of the Final EIS. Where used, this prescription has been deemed optimal related to site-specific considerations as described above.

Harvest Openings Over 100 Acres in Size

There are no harvest openings over 100 acres proposed for this project.

Forest Service Transportation Final Administrative Policy (Roads Rule)

The Licking Creek Timber Sale Final EIS and this ROD have been prepared to be consistent with the Forest Service Transportation Final Administrative Policy (Roads Rule), the Tongass Forest-level Roads Analysis, and the North Shoal Cove Roads Analysis Plan, which is in the Licking Creek project planning record at the Ketchikan-Misty Fjords Ranger District. My determination is that the proposed road construction will not affect any Inventoried Roadless Areas, and an amendment or revision of the Forest Plan is not needed.

Tongass Timber Reform Act (TTRA)

Forest Plan Riparian Standards and Guidelines have been applied to the Licking Creek project, and no commercial timber harvest will occur within 100 feet of any Class I stream or any Class II stream flowing directly into a Class I stream. Harvest units were designed and located to maintain a minimum 100-foot buffer for all Class I streams and Class II streams that flow directly into Class I streams, as required in Section 103 of the TTRA. The design and implementation direction for the Selected Alternative incorporates Best Management Practices (BMPs) and Forest Plan Standards and Guidelines for the protection of all stream classes.

Endangered Species Act

I have determined that this action will not have any adverse impacts on any threatened or endangered species. The National Marine Fisheries Service has concurred that the actions described for the proposed project are not likely to adversely affect any aquatic threatened or endangered species. Consultation was initiated with the U.S. Fish and Wildlife Service, and no terrestrial threatened or endangered species are known to occur in the Licking Creek Timber Sale project area. The U.S. Department of Interior (for the U.S. Fish and Wildlife Service) reported that the project area does not provide valuable habitat and had no comments on the Draft EIS. A combined Biological Assessment (BA) and Biological Evaluation (BE) was prepared for the Licking Creek Timber Sale, as required by Section 7 of the Endangered Species Act (ESA), as amended, and the USDA Forest Service Threatened, Endangered and Sensitive Plant and Animal Species Policy (FSM 2670). The complete BA/BE is included as Appendix D of the Final EIS.

Bald Eagle Protection Act

A Memorandum of Understanding (MOU) between the Forest Service and the U.S. Fish and Wildlife Service to facilitate compliance with the Bald Eagle Protection Act restricts management activities within 330 feet of an eagle nest site. The Selected Alternative is not anticipated to have a significant direct, indirect, or cumulative effect on any bald eagle habitat.

Magnuson-Stevens Fishery Conservation and Management Act (Essential Fish Habitat)

The Magnuson-Stevens Fishery Conservation and Management Act requires a finding on the effects of the Licking Creek project on Essential Fish Habitat. I have determined that this project may affect Essential Fish Habitat, but this risk is minimized through the implementation of Forest Plan Standards and Guidelines and Best Management Practices, and no significant

adverse effects are anticipated to occur. (See the discussion in the Watersheds and Fish Habitat section of Chapter 3 of the Final EIS.)

The National Marine Fisheries Service reviewed the Draft EIS and EFH assessment. The Service concurs that the project may adversely affect EFH, and that the appropriate measures to minimize those effects are the Forest Plan Standards and Guidelines. Formal Essential Fish Habitat consultation is complete in accordance with the agreement between the National Marine Fisheries Service and the Forest Service.

National Historic Preservation Act

Heritage resource surveys of various intensities have been conducted in the project area, following inventory protocols approved by the Alaska State Historic Preservation Officer. Consultation with the State Historic Preservation Officer has been completed, and I have complied with the provisions of 36 CFR, part 800. I have determined that there will be no significant effects on heritage resources.

Native communities have been contacted and public comment encouraged. SHPO has concurred that no effects on known significant cultural resources are anticipated. Forest Service timber sale contracts contain enforceable measures for protecting any undiscovered heritage resource that might be encountered during sale operations. See discussion under Heritage Resources in Chapter 3.

Federal Cave Resource Protection Act of 1988

The actions in the Selected Alternative will not have a direct, indirect, or cumulative effect on any significant cave in the Licking Creek Timber Sale project area. Harvest buffers and other mitigation measures have been applied to protect significant cave resources found in the project area.

Alaska National Interest Lands Conservation Act (ANILCA) Section 810

A subsistence evaluation was completed for the action alternatives considered in detail for the Licking Creek Final EIS, in accordance with ANILCA Section 810. No concerns over any subsistence resources in the project area were identified during project scoping or at the subsistence hearing held for the Licking Creek Timber Sale project in Saxman, Alaska on January 8, 2003. (The hearing transcript was published as Appendix C in the Licking Creek Final EIS.) No significant possibilities of significant restrictions on the abundance and distribution of, access to, or competition for any subsistence resources in the project area are anticipated from implementation of any of the action alternatives. Further, none of the action alternatives impact deer habitat capability to the point that significant restrictions on subsistence use of deer would be anticipated. See discussion under Subsistence in Chapter 3 of the Final EIS for further details.

Clean Water Act (1987, as amended)

The potential effects of the project on water resources and their beneficial uses are discussed in Chapter 3 of the Final EIS. The design of harvest units and roads for the Selected Alternative was guided by standards, guidelines, and direction contained in the Forest Plan, Section 404 of the Clean Water Act, and applicable Forest Service manuals and handbooks. The ROD Appendices 1 and 2, Unit Cards and Road Cards, contain specific details on practices prescribed to prevent or reduce nonpoint sediment sources.

Congress intended the Clean Water Act of 1972 (Public Law 92-500) as amended in 1977 (Public Law 95-217) and 1987 (Public Law 100-4) to protect and improve the quality of water resources and maintain their beneficial uses. Section 313 of the Clean Water Act and Executive Order 12088 of January 23, 1987 address Federal agency compliance and consistency with water pollution control mandates. Agencies must be consistent with requirements that apply to "any governmental entity" or private person. Compliance is to be in line with "all Federal, State, interstate, and local requirements, administrative authority, and process and sanctions respecting the control and abatement of water pollution".

The Clean Water Act (Sections 208 and 319) recognized the need for control strategies for nonpoint source pollution. The National Nonpoint Source Policy (December 12, 1984), the Forest Service Nonpoint Strategy (January 29, 1985), and the USDA Nonpoint Source Water Quality Policy (December 5, 1986) provide a protection and improvement emphasis for soil and water resources and water-related beneficial uses. Soil and water conservation practices (BMPs) were recognized as the primary control mechanisms for nonpoint source pollution on National Forest System lands. The Environmental Protection Agency supports this perspective in their guidance, "Nonpoint Source Controls and Water Quality Standards" (August 19, 1987).

The Forest Service must apply Best Management Practices that are consistent with the Alaska Forest Resources and Practices Regulations to achieve Alaska Water Quality Standards. The site-specific application of BMPs, with a monitoring and feedback mechanism, is the approved strategy for controlling nonpoint source pollution as defined by Alaska's Nonpoint Source Pollution Control Strategy (October 2000). In 1997, the State approved the BMPs in the Forest Service's Soil and Water Conservation Handbook (FSH Handbook 2509.22, October 1996) as consistent with the Alaska Forest Resources and Practices Regulations. This Handbook is incorporated into the Tongass Land Management Plan.

A discharge of dredge or fill material from normal silviculture activities such as harvesting for the production of forest products is exempt from Section 404 permitting requirements in waters of the United States, including wetlands (404(f)(1)(A)). Forest roads qualify for this exemption only if they are constructed and maintained in accordance with best management practices to assure that flow and circulation patterns and chemical and biological characteristics of the waters are not impaired (404(f)(1)(E)). The BMPs that must be followed are specified in 33 CFR 323.4(a). These specific BMPs have been incorporated into the Forest Service's Soil and Water Conservation Handbook under BMP 12.5.

Clean Air Act

Emissions anticipated from the implementation of any project alternative will be of short duration and are not expected to exceed State of Alaska ambient air quality standards (18 AAC 50).

Coastal Zone Management Act (CZMA)

The Coastal Zone Management Act of 1972 (CZMA), while specifically excluding Federal lands from the coastal zone, requires that a Federal agency's activities be consistent with the enforceable standards of a State's coastal management program to the maximum extent practicable when the agency's activities affect the coastal zone.

I have determined that the Licking Creek Timber Sale project may affect the coastal zone, and those Forest Plan Standards and Guidelines and mitigation measures applicable to the Licking Creek Timber Sale project meet or exceed the requirements of the State of Alaska Coastal Zone Management Plan. Therefore, the project is consistent to the maximum extent practicable with the enforceable policies of the Alaska Coastal Zone Management Program. Copies of this determination and supporting information were provided to the State of Alaska, Division of Governmental Coordination, for review as required by the CZMA. The Alaska Department of Natural Resources, Office of Project Management and Permitting (formerly known as State of Alaska, Division of Governmental Coordination) has concurred with this determination.

Executive Orders

Executive Order 11988 (Floodplains)

Executive Order 11988 directs Federal agencies to take action to avoid, to the extent practicable, the long and short-term adverse impacts associated with the occupancy and modification of floodplains. The actions in the Selected Alternative will not occupy or modify any floodplains in the project area.

Executive Order 11990 (Wetlands)

Executive Order 11990, as amended (42 U.S.C. 4321 et seq.), requires Federal agencies having statutory authority and leadership over Federal lands to avoid, to the extent possible, the long- and short-term adverse impacts associated with the destruction or modification of wetlands. Because of the amount of wetlands in the Licking Creek project area, it is not feasible to avoid all wetland areas. Wetland soils not meeting Forest Plan criteria for timber harvest suitability are excluded from the harvest base. Soil moisture regimes and vegetation on some wetlands may be altered in some harvest units; however, the affected wetlands will meet wetland classification and will still function as wetlands in the ecosystem.

Road construction across wetlands is permitted within Alaska. Such construction requires the filling-in of wetlands and creates permanent loss of wetland habitat. Effects to wetlands are minimized through the application of specific Best Management Practices. Road construction through wetlands is avoided where possible. See the Wetlands and Floodplains section in Chapter 3 of the Final EIS for more extensive discussion of the wetlands.

Executive Order 12898 (Environmental Justice)

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, directs Federal agencies to identify and address the issue of environmental justice, i.e., human health and environmental effects of agency programs that disproportionately impact minority and low-income populations. The Executive Order specifically directs agencies to consider patterns of subsistence hunting and fishing when an agency action may affect fish or wildlife. The Selected Alternative would not have disproportionate adverse environmental effects to minority or low-income populations.

Executive Order 12962 (Aquatic Systems and Recreational Fisheries)

Executive Order 12962 requires Federal agencies to evaluate the effects of proposed activities on aquatic systems and recreational fisheries. With the application of Forest Plan Standards and Guidelines, including those for riparian areas, no significant adverse effects to freshwater or marine resources will occur. Recreational fishing access will be unaffected by the proposed road construction, as all new roads will be closed after timber harvest and associated silvicultural activities.

Executive Order 13007 (Indian Sacred Sites)

Executive Order 13007, Indian Sacred Sites, provides presidential direction to Federal agencies to give consideration to the protection of American Indian sacred sites and to allow access where feasible. In a government-to-government relationship, the tribal government is responsible for notifying the agency of the existence of a sacred site. A sacred site is defined as a site that has sacred significance due to established religious beliefs or ceremonial uses, and which has specific, discrete, and delineated location, which has been identified by the tribe. No specific sacred site locations have been identified by tribal governments or their authorized representatives in the project area.

Federal and State Permits, Licenses, and Certifications

Federal and State permits necessary to implement the authorized activities are listed in Chapter 1 of the Final EIS.

Prior to implementation of the proposed timber sale, various permits must be obtained from Federal and State agencies. Administrative actions on these permits would be initiated after the EIS is filed with the Environmental Protection Agency (EPA). The agencies and their responsibilities are listed below.

U.S. Army Corps of Engineers

Approval of discharge of dredged or fill material into waters of the United States (Section 404 of the Clean Water Act of 1977, as amended)

U.S. Coast Guard

Coast Guard Bridge Permit (in accordance with the General Bridge Act of 1946) required for all structures constructed across navigable waters of the U.S.

U.S. Environmental Protection Agency

Storm water discharge permit

National Pollutant Discharge Elimination System review (Section 402 of the Clean Water Act)

State of Alaska, Department of Environmental Conservation

Certification of compliance with Alaska Water Quality Standards (Section 401 Certification)

Solid Waste Disposal Permit (Section 402 of the Clean Water Act)

Implementation Process

Implementation of this decision may occur no sooner than 50 days following publication of the legal notice of the decision in the *Juneau Empire*, published in Juneau, Alaska. The timber from this project is planned to be offered in one or more sales beginning in 2003.

This project will be implemented in accordance with Forest Service Manual and Handbook direction for Timber Sale Project Implementation in FSM 2431.3 and FSH 2409.24. This direction provides a bridge between project planning and implementation and will ensure execution of the actions, environmental standards, and mitigation approved by this decision, and compliance with TTRA and other laws. All applicable Best Management Practices (BMPs) will be applied to the Selected Alternative.

Implementation of all activities authorized by this Record of Decision will be monitored to ensure that they are carried out as planned and described in the Final EIS.

Appendices 1 and 2 of the Record of Decision contain the Selected Alternative's unit and road cards. These cards are an integral part of this decision because they document the specific resource concerns, management objectives, and mitigation measures to govern the layout of the harvest units. These cards will be used during the implementation process to assure that all aspects of the project are implemented within applicable standards and guidelines and that resource impacts will not be greater than those described in the Final EIS. Similar cards will be used to document any changes to the planned layout as the actual layout and harvest of the units occurs with project implementation.

The implementation record for this project will display:

- Each harvest unit as actually implemented,

- Any proposed changes to the design, location or other mitigation measures for the project, and
- Authorization of the proposed changes.

Process for Change During Implementation

Proposed changes to the authorized project actions will be subject to the requirements of the National Environmental Policy Act (NEPA), the National Forest Management Act of 1976 (NFMA), Section 810 of the Alaska National Interest Lands Conservation Act (ANILCA), the Tongass Timber Reform Act (TTRA), the Coastal Zone Management Act (CZMA), and other laws concerning such changes.

In determining whether and what kind of NEPA action is required, the Forest Supervisor will consider the criteria set forth in the Code of Federal Regulations (40 CFR 1502.9(c)), and Forest Service Handbook (FSH) 1909.15, sec. 18 for determining whether to supplement an existing Environmental Impact Statement (EIS). In particular, the Forest Supervisor will determine whether the proposed change is a substantial change to the Selected Alternative as planned and already approved, and whether the change is relevant to environmental concerns. Connected or interrelated proposed changes regarding particular areas of specific activities will be considered together in making this determination. The cumulative impacts of these changes will also be considered.

The intent of field verification is to confirm inventory data and to determine the feasibility and general design and location of a unit or road, not to locate final boundaries or road locations. Minor changes are expected during implementation to better meet on-site resource management and protection objectives. Minor adjustments to unit boundaries are also likely during final layout for the purpose of improving logging system efficiency. This will usually entail adjusting the boundary to coincide with logical logging setting boundaries. Many of these minor changes will not present sufficient potential impacts to require any specific documentation or other action to comply with applicable laws. Some minor changes may still require appropriate analysis and documentation to comply with FSH 1909.15, sec. 18.

Right to Appeal

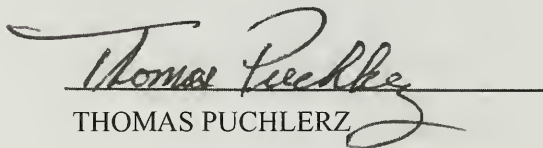
This decision is subject to administrative appeal. Organizations or members of the general public may appeal this decision according to Title 36 Code of Federal Regulations (CFR) part 215. The appeal must be filed within 45 days of the date that legal notification of this decision is published in the *Juneau Empire*, the official newspaper of record. The written Notice of Appeal must be filed with:

Regional Forester, Alaska Region
U.S. Department of Agriculture, Forest Service
P.O. Box 21628
Juneau, AK 99802-1628

It is the responsibility of those who appeal a decision to provide the Regional Forester with sufficient written evidence and rationale to show why the decision by the Forest Supervisor should be changed or reversed. This written Notice of Appeal must:

- State that the document is a Notice of Appeal filed pursuant to 36 CFR Part 215;
- List the name, address, and, if possible, the telephone number of the appellant;
- Identify the decision document by title and subject, date of the decision, and name and title of the Responsible Official;
- Identify the specific change(s) in the decision that the appellant seeks or portion of the decision to which the appellant objects;
- State how the Responsible Official's decision fails to consider comments previously provided, either before or during the comment period specified in 36 CFR 215.6 and, if applicable, how the appellant believes the decision violates law, regulation or policy.

For additional information concerning this decision, contact Jerry Ingersoll, District Ranger, Ketchikan-Misty Fiords Ranger District, 3031 Tongass Avenue, Ketchikan, AK 99901, or call (907) 225-2148.


THOMAS PUCHLERZ

Forest Supervisor

7-30-03
Date



Note: Compiled from various digital geographic data. This map may not meet National Map accuracy standards.



Licking Creek Record of Decision

Land and Forest Conditions

- Productive Old Growth Forest
- Non Productive Old Growth Forest Lands
- Non-forested Lands
- Old Growth Reserves (OGR) Current Location Natural Setting
- Non NFS Land (NFI)
- Non Project Area
- Lakes or Saltwater
- ROD Unit

Previous Activity:

- Previous and Pending Harvest Areas
- Existing Roads used in ROD

Other Lines:

- ANMU Class I Stream
- ANMU Class II Stream
- ANMU Class III Stream
- ANMU Class IV Stream
- VCU 7140 Boundary
- Project Boundary
- Proposed Classified Roads used in ROD
- Temporary Proposed Roads used in ROD

Mapscale 1: 50000



Contour Interval: 100 feet

0 .75 1.5
Miles





Appendix 1

Unit Cards

Exhibitions

and

Appendix 1

Unit Cards

The unit cards and road cards in Appendix 1 and Appendix 2 are used to explain site-specific information about each unit and road segment and any resource concerns and mitigation.

Appendix 1, Unit Cards, displays narrative cards and maps for the proposed harvest units in the Selected Alternative, in numerical order. Each narrative card and accompanying map displays the site-specific silvicultural prescriptions, resource concerns, and mitigation for the unit.

Appendix 2, Road Cards, displays narrative cards and maps for the proposed roads in the Selected Alternative, which include the management objectives for each segment of road. The road cards are also in numerical order.

For a comprehensive picture of the proposed units and roads for the Selected Alternative, refer to the fold-out map at the end of the Record of Decision.

The following section is background information for the unit and road cards. This includes more detailed resource information, and the mitigation measures that can be used to address resource concerns. These mitigation measures can be either from the Forest Plan or project-specific.

Resource Information

Silvicultural Prescriptions

Silvicultural prescriptions have been developed to meet the management objectives based on each site and the Forest Plan direction. These objectives may include retaining old-growth characteristics for biodiversity, protection of soils, watershed, wildlife habitat or scenery values or designing systems that are most economical for logging feasibility on a site.

Silvicultural prescriptions will include these unit cards as well as sale layout and marking guidelines for each unit that is included in the Licking Creek Timber Sale Record of Decision. Minor changes to boundary layout and to the prescriptions are expected during implementation to better meet on-site conditions. The harvest treatment descriptions on the unit cards are basic guidelines to achieve the desired stand structure and logging system operability, and address resource concerns. Silvicultural systems and some of the prescriptions that may achieve the desired results are described below:

- **Uneven-aged Management:** A system that is used to maintain high forest cover, regeneration of desirable species, and development of trees through a range of diameter or age classes. Prescriptions to obtain this structure include single-tree selection (STS) and group selection (GS). Approximately 50 percent of the basal area of trees will be retained on these units.
- **Even-aged Management:** Most merchantable trees would be harvested. The objective is to create a fast-growing stand of trees to maximize wood fiber production. Some trees may be left to create future stand diversity if the largest trees can be removed safely. This can be achieved generally if the stand will be helicopter or shovel yarded. The stand would regenerate into a mostly single-aged stand. In some instances, trees are left in the unit to promote regeneration of a specified species. This type of prescription is called Seed Tree (ST). Other prescription types can include even-aged clearcut with reserves (EACCR) or clearcut (CC).
- **Two-aged Management:** A system in which the majority of the trees in a harvest unit are cut in one entry and the rest (about 20 to 30 percent of the unit) are left as residual

trees either singly or in patches. The residual trees remain unharvested to provide structural diversity, and older-aged trees within the second-growth stand. Two-aged clearcutting with reserves (2ACCR) is a prescription that can be used to obtain this stand structure.

The Selected Alternative contains mostly even-aged silvicultural systems with a small portion of uneven-aged systems. No two-aged system treatment is prescribed for this project.

Watersheds and Fisheries

All known streams are shown on the unit card maps. These streams and any additional streams found during layout will be protected by following the Forest Plan Riparian Standards and Guidelines listed below. Class IV streams will be protected by following Best Management Practices. Timing restrictions for instream work are listed on the road cards.

Process Groups and Channel Types

A process group describes streams with similar interrelationships between watershed runoff, landform relief, geology, and glacial or tidal influences on erosion and deposition. A channel type more precisely characterizes a stream and helps predict the probable responses to natural and human influences. Channel types incorporate other aspects such as gradient, pattern, stream bank incision and containment and riparian area vegetation communities. See the Forest Plan, Figure D-1 (page D-4) for a visual representation of the typical distribution of channel process groups. Table A1-1 shows the Forest Plan channel type codes used on the unit card narratives. Each unit card summarizes the protection. Only the channel types found in the Licking Creek project area are listed.

Riparian Management Areas (RMAs)

Stream buffers maintain biodiversity and productivity, streambank and stream channel processes and functions, the recruitment of large woody debris into the stream channel, and the beneficial uses of water quality over the short and long term. Riparian Management Areas are areas of special concern to fish, other aquatic resources and wildlife. Riparian areas also include wetland soils and vegetation adjacent to streams. They are delineated according to the Forest Plan, Chapter 4, Riparian Standards and Guidelines (RIP2, III, E).

Riparian Standards and Guidelines for Timber Harvest

The Tongass Timber Reform Act (TTRA) mandates leaving minimum 100-foot wide buffer strips along both sides of all Class I and Class II streams that flow into Class I streams. This was incorporated into the Forest Plan Standards and Guidelines as "No commercial harvest within 100 feet of Class I streams and Class II streams that flow into Class I streams."

Reasonable Assurance of Windfirmness

For Floodplain (FP), Alluvial Fan (AF), High Gradient Contained (HC), Low Gradient Contained (LC), Moderate Gradient Contained (MC), Moderate Gradient/Mixed Control (MM), and Palustrian (PA) areas, manage an appropriate distance beyond the no-harvest zone to provide for a reasonable assurance of windfirmness of the Riparian Management Area (pay special attention to the area within one site-potential tree height of the Riparian Management Area). Site-potential tree heights vary according to the process groups as follows:

- Floodplain - 130 feet,
- Alluvial Fan - 140 feet,
- High Gradient Contained - 120 feet,
- Low Gradient Contained - 100 feet,
- Moderate Gradient Contained - 100 feet,
- Moderate Gradient/Mixed Control - 120 feet, and
- Palustrian - 85 feet.

Table A1-1
Channel Types in the Licking Creek Project Area

Process Group	Channel Type Code	Channel Type Description
Alluvial Fan (AF)	AF1	Moderate gradient alluvial fan channel
	AF2	High gradient alluvial cone channel
Flood Plain (FP)	FP3	Low gradient, channel width less than 10 meters
	FP4	Low gradient, channel width 10-20 meters
Low Gradient Contained (LC)	LC1	Incision less than 10 meters
	LC2	Incision greater than 10 meters
High Gradient Contained (HC)	HC1 ¹	Shallowly incised muskeg channel
	HC2	Shallowly to moderately incised footslope channel
	HC3	Deeply incised upper valley channel
	HC4 ¹	Deeply incised muskeg channel
	HC5	Shallowly incised high gradient channel
	HC6	Deeply incised high gradient channel
Moderate Gradient Contained (MC)	MC1	Narrow, shallow contained channel
	MC2	Moderate width and incision contained channel
	MC3	Deeply incised contained channel
Moderate Gradient, Mixed Control (MM)	MM1	Narrow mixed control channel
	MM2	Moderate width, mixed control channel
Palustrine (PA)	PA1	Narrow, placid flow channel
	PA2	Moderate width, placid flow channel
	PA5	Beaver dam/pond channel

¹Do not occur in Licking Creek project area
Source: Forest Plan, pages D-1 - D-3.

Visual Quality Objectives

The following visual quality objectives from the Forest Plan provide standards for management, based on the landscape's scenic characteristics and public viewing concern.

- **Partial Retention:** Changes in the landscape may be visually evident, but must be integrated into and visually subordinate to the surrounding landscape and should not attract attention.
- **Modification:** Changes in the landscape may visually dominate the surrounding natural landscape, however they should be compatible with the surrounding landscape.
- **Maximum Modification:** Management activities may visually dominate the characteristic or surrounding landscape.

Scenery Standards and Guidelines by LUD

The guidelines for scenery differ between the two Land Use Designations (LUDs) in the project area that allow timber harvest.

<u>Distance Zone</u>	<u>Modified Landscape</u>	<u>Timber Management</u>
<u>For areas visible from Visual Priority Travel Routes and Use Areas:</u>		
Foreground (0-1/2 miles)	Partial Retention	Modification
Middleground (1/2 – 3 to 5 miles)	Modification	Maximum Modification
Background (3 to 5 miles and greater)	Modification	Maximum Modification

For areas not visible from Visual Priority Travel Routes:

All areas	Maximum Modification
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The primary scenic objective for the Modified Landscape LUD is to design management activities that, though clearly visible, blend in with the features of the natural landscapes when viewed from Visual Priority Travel Routes and Use Areas. In the Timber Production LUD, management activities may clearly dominate the natural landscape character, but still mimic some visual features of the surrounding landscape while allowing a sustained yield of timber.

Visual Quality Objectives for Units in the Modified Landscape LUD:

<u>Partial Retention</u>	<u>Modification</u>
Units- 19, 44	Units- 40, 43, 50

Visual Quality Objectives for Units in the Timber Production LUD:

Maximum Modification

Units- 8, 9, 10, 11, 24, 29, 31, 34, 35, 39, 51, 63, 65, 67, 68, 70, 71

General Mitigation Measures

These general measures apply to all units and roads in the Licking Creek project. The source(s) of each general measure are listed after the measure in terms of individual Forest-wide Standards and Guidelines (see Chapter 4 of the Forest Plan) or BMPs (see Appendix C of the Forest Plan and Chapter 10 of FSH 2509.22, The Soil and Water Conservation Handbook).

Air Quality Protection

Design projects to control air pollution impacts and to ensure that the predicted emissions from all pollution sources do not exceed ambient air quality standards, as specified under the Alaska Administration Code, Title 18, Chapter 50. (AIR-112)

Soil/Water Protection during Timber Sale Planning

Incorporate soil and water resource considerations into timber sale planning. These considerations include:

- site-specific considerations,
- site preparation,
- designating water quality protection needs on sale area maps,
- locating and designing landings for good drainage and dispersion of water,
- incorporating erosion control and timing responsibilities into the Operating Schedule,
- scheduling and enforcement of erosion control during and at completion of the timber sale, including non-recurring "C" provisions to protect soil and water resources in timber sale contracts, and
- seeking an environmental modification of the contract if new circumstances or conditions indicate that soil, water, or watershed damage may occur.

(BMPs 13.1, 13.2, 13.3, 13.4, 13.9, 13.10, 13.11, 13.12, 13.14, 13.17, and 13.18)

Soil/Water Protection during Road Development

Implement measures to reduce surface erosion and drainage interruption related to transportation. This includes water barring and cross-draining roads using ditches and culverts to prevent water running long distances over roads, closure, and seeding and fertilizing cut-and-fill slopes. (BMPs 14.1, 14.2, 14.3, 14.5, 14.7, 14.8, 14.9, 14.10, 14.11, 14.12, and 14.19)

Soil/Water Protection during Road Management

Conduct road maintenance and snow removal operations to minimize disruption of road surfaces, embankments, ditches, and drainage facilities, and use road closures or other measures to keep road surface and road site erosion at low or background levels. (TRAN23-I, BMPs 14.20 and 14.23)

Management of Road Use to Reduce Erosion and Sedimentation

Control access and manage road use to reduce the risk of erosion and sedimentation from road surface disturbance especially during the higher risk periods associated with high runoff and spring thaw conditions. (BMP 14.22)

Temporary Road Obliteration

Obliterate temporary roads after use, remove or bypass drainage structures and install waterbars in appropriate places. (RIP2-II and BMPs 12.17 and 14.24)

Soil/Water Protection during Development of Rock Sources, LTFs, & Other Facilities

Implement measures to reduce surface erosion and other impacts on soils and water from gravel sources and quarries, LTFs, sortyards, and other facilities. (BMPs 14.18, 14.19, 14.25, 14.26, and 14.27)

LTF Siting

Site LTFs in locations which will best avoid or minimize potential impacts on water quality, aquatic habitat, wildlife, and other resources. (TRAN214-V, WILD112, and BMP 14.4)

Camp and Facility Siting

Site camps and other facilities sufficiently far from important seasonal bear concentrations, raptor nest sites, and other important wildlife habitats, to avoid or minimize wildlife-human conflicts. (WILD112).

Sanitation at Facilities

Comply with all regulations for the disposal of sewage at camps, LTFs, and other facilities; require incinerators and/or other bear-proof garbage disposal methods at work camps. (FAC1, FAC22, WILD112-VI, BMPs 12.10, 12.15, and 12.16)

Accidental Spills

Implement measures and plans to prevent the contamination of soil and water from accidental spills of petroleum products and hazardous substances. (BMPs 12.8 and 12.9)

Heritage Site Discovery

Suspend work if a heritage site is discovered during project implementation. Authorize resumption of work only after consultation with the State Historic Preservation Office is complete.

Karst/Cave Inventory

Inventory karst landscapes and cave resources prior to initiation of project planning (including the use of dye tracing). (KARST-III)

Maximum Size of Created Openings

Limit created openings to a maximum size of 100 acres. (TIM114-IV)

Maintain Advance Regeneration

Maintain advance regeneration within the unit to meet reforestation needs and stand objectives. (TIM111-2-I)

Maintain Minor Tree Species

Selectively maintain minor species (e.g., yellow-cedar, western redcedar, Pacific yew), where appropriate for the site, as viable components of future stand, for vegetative diversity, and for seed trees. (TIM111-2-I, TIM114-II)

Windthrow Hazards Along the Boundaries of Protected LUDs

Take measures that protect LUDs which prohibit timber harvest activities from harvest-related windthrow. (TIM114-XII)

Certification of Reforestation

Certify that every unit that receives a final harvest meets or surpasses the stocking guidelines and certification standards (FSH 2409.17) within 5 years. (TIM24)

Wetland Protection

Minimize the loss of all wetlands, but particularly the higher-value wetlands (especially fens), and minimize the adverse impacts of land management activities on wetlands; follow Executive Order 11990 and the BMPs. (WET-I, WET-III, BMP 12.5)

Beach and Estuary Fringe Protection

Avoid harvest within the beach and estuary fringe; avoid road construction within this zone, except where no feasible alternative exists. (BEACH 2)

Non-Development LUD Protection

Avoid timber harvest impacts and minimize road construction within non-development LUDs such as Old-growth Habitat, Remote and Semi-remote Recreation, and Wild and Scenic River corridors.

Connectivity Between Old Growth Reserves

Provide corridors of old-growth forest between and among medium and large old-growth reserves. Where sufficient connectivity does not exist, or where the minimum Forest Plan criteria are not met, relocate or redesign mapped, small old-growth reserves. (WILD112-XVIII)

Marine Mammal Protection

Ensure that Forest Service permitted or approved activities are conducted in a manner consistent with the Marine Mammal Protection Act, the Endangered Species Act, and National Marine Fisheries Service regulations for approaching whales, dolphins, porpoises, seals, and sea lions. Site camps, LTFs, and other facilities are to be located at least 1 mile away from known Steller sea lion haulouts. (TE&S-I)

Site-specific Mitigation Measures Incorporated into Unit and Road Design

The specific mitigation measures that may be applied to selected units and/or roads in a project are identified in this section. The source(s) of each measure are listed after the measure in terms of individual Forest-wide Standards and Guidelines (see Chapter 4 of the Forest Plan) or BMPs (see Appendix C of the Forest Plan and Chapter 10 of FSH 2509.22, the Soil and Water Conservation Handbook). These measures are listed on each unit or road card as necessary.

Minerals and Geology

M1 - Protection of Mineral Development Improvements: Protect known mineral development improvements, such as mine claim markers, by specifications in timber sale and road construction contracts. (MG12-II)

Karst

K1 - Avoid Effects on Karst/Cave Features: Avoid road construction or modify harvest unit design to avoid impacts on karst or cave features. (KARST-III4)

Fish, Water, and Soils

F1 - Riparian Buffers: Establish no-harvest and selective cut buffers along streams and around lakes to protect riparian areas as defined by the Riparian Standards and Guidelines. Protect buffers from adjacent harvest activities (e.g., directional felling, split yarding, suspension requirements). (RIP2, BMP 12.6)

F2 - Directional Felling Along Buffers: Trees identified for harvest will be felled to avoid riparian areas designated for "no commercial harvest" and stream courses. (RIP2-II)

F3 - Class IV Stream Protection: Split yard and directionally-fall trees away from Class IV streams without buffers. (RIP2-II)

F4 - Yarding Across Streams: Fully suspend logs where yarding is to be done across streams or the full length of a stream or drainage. (RIP2-II)

F5 - Fish Passage: Maintain fish passage at Class I and II stream road crossings using properly designed stream-crossing structures (consult the Aquatic Habitat Management Handbook, FSH 2609.24). (FISH112-IV)

F6 - Use of Bridges: Install bridges at designated stream crossings to minimize the amount of sediment entering streams and/or to ensure good fish passage (TRAN 214-II).

F7 - Instream Construction Timing Restrictions: Implement timing restrictions for instream construction activities for the protection of anadromous and resident fish. (RIP2-II and BMPs 14.6, 14.10, 14.14, and 14.17)

F8 - Siting of Road-Stream Crossings: Modify the location of road-stream crossings to correspond with stable stream reaches. (TRAN214-II)

F9 - Routing of Roads near Streams: Modify road routes to avoid locations near fish-bearing streams. (TRAN214-II)

F10 - Routing of Roads through Wetlands and Other Sensitive Areas: Modify location of Forest Development Roads to minimize impact to wetlands, floodplains, estuaries, and tidal meadows. (TRAN214-III)

F11 - Harvesting Timber in/near Wetlands and Floodplains: Modify unit design or logging system to avoid or minimize damage to muskegs, other wetlands, or floodplains. (S&W112-I, BMPs 12.4 and 12.5)

F12 - Management of Road Use to Reduce Erosion and Sedimentation: Control access and manage road use to reduce the risk of erosion and sedimentation from road surface disturbance especially during the higher risk periods associated with high runoff and spring thaw conditions. (BMP 14.22)

F13 - Storm-proofing Roads: Design system roads with oversized culverts, outfall riprap, armored dips adjacent to culverts, substantial ditch blocks, drivable waterbars, and/or other measures to prevent culvert failure or erosion during periods of inactivity. (TRAN22-I)

F14 - Road Storage: Establish self-maintaining drainages across roads, remove bridges and reestablish natural drainage patterns, and establish vegetation cover on the road to prevent erosion during periods of inactivity. (TRAN22-I)

F15 - Avoid Harvesting Very High Hazard Soils: Modify unit design to avoid very high mass movement areas, including slopes exceeding 72 percent. (S&W112-I, BMP 13.5)

F16 - Avoid Road Development on Very High Hazard Soils: Avoid road construction along unstable slopes, including slopes exceeding 67 percent. (S&W112-I and BMP 13.5)

F17 - Soil/Water Protection along Roads on Very High Hazard Soils: Where avoidance of road construction along unstable slopes is not possible, take special precautions with fill to prevent soil erosion, stream sedimentation, and mass wasting or require full bench construction and end hauling of excavated material. (S&W112-I, TRAN 214-II, and BMP 14.7)

F18 - Suspension Requirements to Protect Soils: Use partial- to full-suspension logging systems in areas with high mass movement potential. (S&W112-I, BMP 13.9)

F19 - Steep, Class III, V-notch Streams: Establish no-harvest buffers along steep, Class III, v-notch streams with high erosion potential. (S&W112-I, BMPs 12.6 and 13.16)

T2 - Maintain Minor Tree Species: Selectively maintain minor species (e.g., yellow-cedar, western redcedar, Pacific yew), where appropriate for the site, as viable components of future stand, for vegetative diversity, and for seed trees. (TIM111-2-I, TIM114-II)

W1 - Clearcutting with Reserves: Provide for greater habitat diversity on a stand level over time by using clearcutting with reserve trees (even-aged system) as a harvest prescription (see Appendix G to Forest Plan Final EIS). (WILD112-III)

W2 - Seed Tree Method: Provide for greater habitat diversity on a stand level over time by using the seed tree method (even-aged system) as a harvest prescription (see Appendix G to Forest Plan Final EIS). (WILD112-III)

W3 - Shelterwood Method: Provide for greater habitat diversity on a stand level over time by using the shelterwood method (even-aged or two-aged systems) as a harvest prescription (see Appendix G to Forest Plan Final EIS). (WILD112-III)

W4 - Reserves Under a Two-aged Harvest System: Provide for greater habitat diversity on a stand level over time by leaving reserve trees (two-aged system) as a harvest prescription (see Appendix G to Forest Plan Final EIS). (WILD112-III)

W5 - Patch or Strip Clearcutting: Provide for greater habitat diversity on a stand level over time by using patch or strip clearcutting (two-aged or uneven-aged systems) as a harvest prescription (see Appendix G to Forest Plan Final EIS). (WILD112-III)

Timber

Wildlife and Threatened/ Endangered/ Sensitive Species

W6 - Selection Harvest: Provide for greater habitat diversity on a stand level over time by using the selection method (uneven-aged system) as a harvest prescription (see Appendix G to Forest Plan Final EIS). (WILD112-III)

W7 - Leaving Nonmerchantable Trees and Snags: Provide for greater habitat diversity on a stand level over time by leaving most nonmerchantable trees and snags after harvest. (WILD112-III)

W8 - Restrictions on Helicopter Yarding: Modify helicopter yarding routes and/or timing of helicopter activity to avoid important wildlife habitats (e.g., mountain goat summer/kidding habitat or active eagle nest sites). (WILD112-XII)

W9 - Road Closures: Close roads to motorized use to protect brown bears, wolves, marten and other large predators and furbearers from overharvest. (WILD112)

W10 - Protection of Goshawk Nests: Avoid harvest and road construction near confirmed and probable northern goshawk nest sites according to Forest-wide Standard & Guideline TE&S-II, J, 1. (TE&S-II)

W11 - Timing of Activities and Disturbance at Goshawk Nests: Avoid continuous disturbance within 600 feet of an active goshawk nest from March 15 to August 15 (TE&S-II).

W13 - Protection of Bald Eagle Nest Trees/Other Sites and Timing of Activities: Avoid all activity, modify unit or road design, and/or limit timing of activities, near bald eagle nest trees, perch trees, and winter roost sites in accordance with the Interagency Agreement established with the U.S. Fish and Wildlife Service. (WILD112-V)

W20 - Protection of Trumpeter Swan Nesting, Brooding, and Wintering Areas and Timing of Activities: Avoid all activity, modify unit or road design, and/or limit timing of activities, within 0.5 mile of wetlands used by nesting, brood-rearing, and wintering trumpeter swans to avoid impacts. (TE&S-II)

W24 - Protection of Wolf Dens: Maintain a 1,200-foot forested buffer, where available, around known active wolf dens. (WILD112-XI)

W25 - Timing of Activities and Disturbance of Denning Wolves: Avoid road construction within 600 feet of known active wolf dens. (WILD112-XI)

W28 - Management of Marten Habitat: Maintain important features of forest stand structure in harvest units in order to manage high-value marten habitat according to Forest-wide Standard & Guideline WILD112-XVI, A, 2. (This applies to VCUs in higher risk biogeographic provinces). (WILD112-XVI)

W29 - Rare or Endemic Terrestrial Mammals: Modify units or roads to avoid habitats supporting rare or endemic terrestrial mammals that may represent unique populations with restricted ranges. (WILD112-XVII)

W31 - Protection of Sensitive Plant Species: Modify unit boundaries or road routing to avoid habitats supporting populations of sensitive plant species. (TE&S-II)

W32 - Protection of Candidate Species or Species of Concern: Modify units, roads, or other facilities to avoid or reduce impacts on U.S. Fish and Wildlife Service-designated Candidate species and Species of Concern. (TE&S-III)

W33 - Corridors Between Old-Growth Habitat Reserves: Avoid harvest in order to maintain corridors of old-growth forest between old-growth habitat reserves and other natural setting LUDs at the landscape scale. (WILD112-XVIII)

Heritage Resources

H1 - Avoid Direct Effects on Heritage Resource Sites: Avoid road construction or harvest unit placement in areas with heritage resource value. (HER-IV)

H2 - Avoid Indirect Effects on Heritage Resource Sites: Provide for protection from indirect effects on heritage resource sites near proposed harvest units and roads. (HER-V4)

Appendix 1

Recreation and Tourism

Scenery

Subsistence

H3 - Mitigation through Data Recovery: Mitigate valuable heritage resource sites through data recovery. (HER-IV)

R1 - Access Restrictions for Recreation: Close or restrict access on roads to maintain remoteness of areas after harvest. (REC112-II)

R2 - Access Improvement for Recreation: Open roads after project implementation to take advantage of opportunities created by new access. (REC112-II)

V1 - Clearcutting with Reserves: Reduce visual contrast with adjacent areas by using clearcutting with reserve trees (even-aged system) as a harvest prescription (see Appendix G to Forest Plan Final EIS). (VIS11-III)

V2 - Seed Tree Method: Reduce visual contrast with adjacent areas by using the seed tree method (even-aged system) as a harvest prescription (see Appendix G to Forest Plan Final EIS). (VIS11-III)

V3 - Shelterwood Method: Reduce visual contrast with adjacent areas by using the shelterwood method (even-aged or two-aged systems) as a harvest prescription (see Appendix G to Forest Plan Final EIS). (VIS11-III)

V4 - Reserves Under a Two-aged Harvest System: Reduce visual contrast with adjacent areas by leaving reserve trees under a two-aged system as a harvest prescription (see Appendix G to Forest Plan Final EIS). (VIS11-III)

V5 - Patch/Strip Clearcutting: Reduce visual contrast with adjacent areas by using patch or strip clearcutting (two-aged or uneven-aged systems) as a harvest prescription (see Appendix G to Forest Plan Final EIS). (VIS11-III)

V6 - Selection Harvest: Reduce visual contrast with adjacent areas by using the selection method (uneven-aged system) as a harvest prescription (see Appendix G to Forest Plan Final EIS). (VIS11-III)

V7 - Leaving Nonmerchantable Trees: Reduce visual contrast with adjacent areas by leaving most nonmerchantable trees after harvest. (VIS11-III)

V8 - Modification of Unit Boundaries: Modify unit boundaries to assure that the harvest unit meets the proposed VQO in partial retention and retention areas. (VIS11-II)

V9 - Treatment of Rock Sources: Locate rock sources off the road along Visual Priority Routes, so that rock source development is not apparent from the road and/or use a landscape architect in the planning/design of rock pits. (VIS11-II)

V10 - Roadside Cleanup: Provide for roadside cleanup of ground-disturbing activities in partial retention and retention areas. (VIS11-II)

V11 - LTF Design: Use low profile LTF design to minimize visibility from Visual Priority Travel Routes and Use Areas. (VIS11-II)

V12 - Temporary LTFs: Use temporary LTF and incorporate rehabilitation measures into project analysis and the contract package to reduce long-term visual effects in partial retention areas. (VIS11-II)

S1 - Access Restrictions for Subsistence: Close or restrict access on roads to maintain remoteness of areas after harvest to address subsistence issues. (SUB-I)

S2 - Access Improvement for Subsistence: Open roads after project implementation to address subsistence issues. (SUB-I)

Unit Cards

Unit cards are used to explain site-specific information about each unit. The units are displayed in numerical order. Each narrative card and accompanying map displays the site-specific silvicultural prescriptions, resource concerns, and mitigation for the unit. For a comprehensive picture of the proposed units and roads for the Selected Alternative, refer to the fold-out map at the end of the Record of Decision.

Narratives

The general measures described in the Introduction to this appendix apply to all units in the Licking Creek project. Site-specific measures to be applied to a particular unit are listed in the individual unit card narrative, under the appropriate resource of concern.

Maps

One Licking Creek harvest unit is highlighted on each unit card map. Adjacent Licking Creek units are outlined on the map as "Other ROD Unit"; they are not numbered.

The maps show resource information to support the narrative discussion. Because not everything can be shown on the maps, resources of particular concern for management were selected. These include stream classes and riparian buffers, slopes exceeding 72 percent, mass movement index 4 (MMI4) soils, high-value marten habitat, and Old-growth Reserves.

The Geographic Information System (GIS) is used to generate slopes exceeding 72 percent, as shown on the unit maps. Because of map scales and other limitations of the technology, GIS analysis produces generalized slope maps that may not precisely locate steep slopes where they occur on the ground. These oversteepened slopes are verified during on-site visits by the soil scientist. On-site findings were recorded in the unit card narration, but not updated in GIS. Therefore, there may be differences in slopes exceeding 72 percent as displayed in the unit card maps and as discussed in the narration. The narration is the most site-specific information and is followed during unit layout.

The maps also show areas permanently reserved from timber harvest for site-specific concerns, such as high risk soils or high vulnerability karst; these are labeled as "Reserve Areas." These areas were mapped during on-site visits by the resource specialists and then recorded in GIS.

Harvested areas are shown on the maps with small trees, representing second growth. For visual clarity, the other layers (such as MMI4 soils, slopes exceeding 72 percent, and high-value marten habitat) are masked and not shown on these areas.

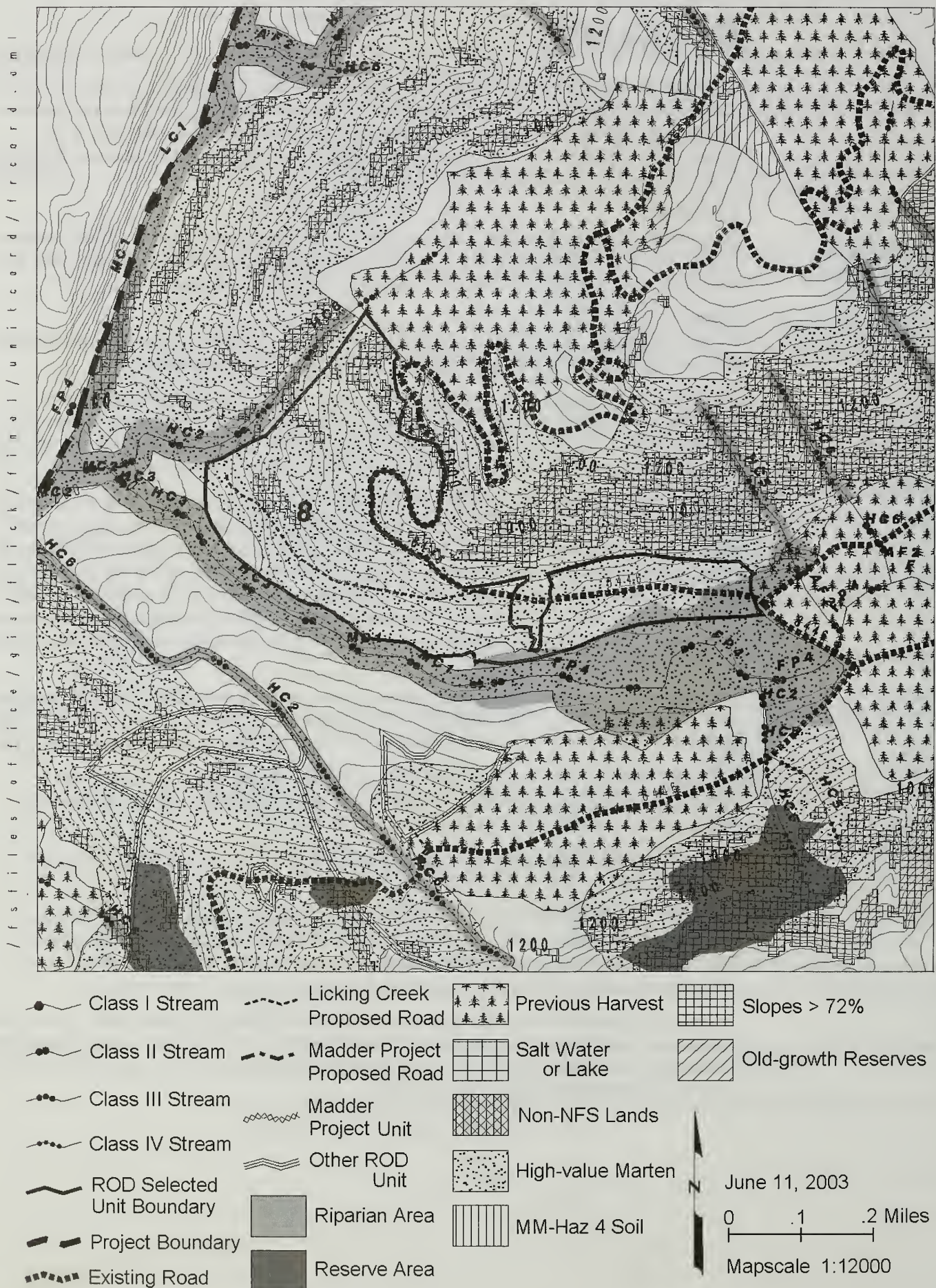
Similarly, a private land parcel in the project area is shown in cross-hatching, and other resource layers are masked and not shown.

Licking Creek Proposed Road shown on the unit card maps includes both classified and temporary roads, not yet built, which are needed to access the harvest units in this project.

Existing Road includes roads already built for previous projects, which may also be used to access harvest areas in this project. Some of these roads will require reconstruction.

The unit card maps also show **Madder Project Road** and **Madder Project Unit**. These roads and units were included in the Sea Level Timber Sale Record of Decision, signed in May 1999. The Madder Timber Sale is scheduled to be sold. Refer to the Sea Level Timber Sale ROD for resource information on these roads and units.

Licking Creek Record of Decision Unit: 8



Unit Data Card – Licking Creek Timber Sale Record of Decision

Unit Number:	8	Planned Unit Acres:	78	Silvicultural Prescription:	EACCR		
LUD:	TM	Primary WAA Number:	406	Quad:	KTNC4SW	VCU Number:	74602
		Logging Systems:	Cable	Total Estimated Harvest Volume (CCF):			3,372

HERITAGE RESOURCES:

No resource concerns were identified. If found, avoid rock shelters and walk in caves. H1, H2

ENGINEERING/ROADS:

Road 8446150 accesses Unit 8. Road is located completely within the unit and construction should be moderate over most portions of the road. Road is located to accommodate logging systems and still have least impact on resources. There are no sections where road crosses steep sideslopes exceeding 67%; if road is constructed in areas of rock and full bench excavation, end hauling of excavated material may be warranted (BMP 14.7). See also road cards in Appendix 2.

FISH/WATERSHED:

Class II FP4 South: Greater of 130-foot or floodplain RMA buffer is required. F1, F2

Class II MC1/HC3 Southwest: Greater of 100-foot or RMA (top of V-notch) buffer is required. F1, F2

Class III HC6 North: Sideslope Standard and Guideline RMA (top of V-notch) buffer is required. F1, F2

Class II HC2 North: Greater of 100-foot or RMA (top of V-notch) buffer is required. F1, F2

GEOLOGY:

No resource concerns were identified.

LANDS:

No resource concerns were identified.

RECREATION/SCENERY:

No resource concerns were identified.

SILVICULTURE:

Vegetation: Stand is highly productive. Overstory is dominated by western hemlock and transitions to spruce forest type near the southern border. The understory is dominated by devil's club and blueberry. Windthrow potential is low to moderate. Mistletoe infections are present throughout in varying severities. A managed stand, harvested in 1993, is adjacent to the northeast border.

Stand Management Objective: Stand will be predominantly even-aged with windfirm reserve clumps and scattered trees where possible. Natural regeneration is expected to be abundant. Future treatments may include pre-commercial thinning at age 15-25 to promote tree growth and species diversity.

Treatment: Treatment is clearcut with reserves. Leave 10-20% of the stand structure, scattered and/or clumped, in the areas of the unit that contain high-value marten habitat, ensuring that enough large trees (4 per acre >20" dbh) and snags (3 per acre > 20" dbh) are retained to meet the requirements for the standards and guidelines. Reserve areas may be clumped to obtain windfirmness. Elsewhere, leave areas of low productivity forest, stream buffers, etc. to reduce total opening size. Where possible, retain unmerchantable trees throughout the unit, particularly snags and near snags of large diameter. Avoid leaving isolated strips of timber between the borders of managed stands.

SOILS:

Slopes Greater than 72%: The results of an on-site stability investigation determined that partial suspension of logs in the steep section of the north side of the unit is required to reduce soil disturbance (BMPs 13.2 and 13.9).

TIMBER:

This unit is designed for short-span cable logging.

WILDLIFE:

Marten Standards and Guidelines apply: leave 10-20% of original stand structure, in areas of high-value marten habitat, averaging four large trees/acre (20-30" dbh), three snags/acre, and three large, downed trees/acre (20-30" dbh).

Licking Creek Record of Decision Unit: 9



Unit Data Card – Licking Creek Timber Sale Record of Decision

Unit Number:	9	Planned Unit Acres:	13	Silvicultural Prescription:	EACCR		
LUD:	TM	Primary WAA Number:	406	Quad:	KTNC4SW	VCU Number:	74603
		Logging Systems:	Helicopter	Total Estimated Harvest Volume (CCF):			550

HERITAGE RESOURCES:

No resource concerns were identified. If found, avoid rock shelters and walk in caves. H1, H2

ENGINEERING/ROADS:

Logs will be helicopter yarded to Road 8446000. See attached road card in Appendix 2.

FISH/WATERSHED:

Class III HC2/HC6 East: Sideslope Standards and Guidelines or RMA (top of V-notch) buffer is required. F1, F2

Class I MC2 North: Greater of 100-foot or RMA (top of V-notch) buffer is required. F1, F2

GEOLOGY:

Carbonate mapped in unit is based on adjacent outcrops, the trend of those outcrops, and aerial photograph interpretation. Inventory by other resource specialists has not indicated the presence of karst features in the unit. If features are found during unit layout, the appropriate Standards and Guidelines will be applied.

LANDS:

No resource concerns were identified.

RECREATION/SCENERY:

No resource concerns were identified.

SILVICULTURE:

Vegetation: This is a low-lying stand that has irregular, rolling topography. The southeast border is shared with Unit 10. Overstory is dominated by western hemlock. There are a few areas that have a mixed conifer plant association. Windthrow potential is low, except in the eastern portion of the unit where a high amount of wind snap was found, particularly in decadent western hemlock. In this portion of the unit, an understory reinitiation stand structure phase is evident, indicating a history of wind disturbance. Yellow cedar decline is present in one small area. Mistletoe infections are present throughout and are minor in severity.

Stand Management Objective: Stand will be predominantly even-aged with windfirm reserve clumps and scattered trees where possible. Natural regeneration is expected to be abundant. Future treatments may include pre-commercial thinning at age 15-25 to promote tree growth and species diversity.

Treatment: Treatment is clearcut with reserves, implementing a diameter limit prescription. Leave 10-20% of the stand structure, scattered and/or clumped, in the areas of the unit that contain high-value marten habitat, ensuring that enough large trees (4 per acre >20" dbh) and snags (3 per acre > 20" dbh) are retained to meet the requirements for the standards and guidelines. Reserve areas may be clumped to obtain windfirmness. Where possible, retain all unmerchantable trees throughout the unit, particularly snags and near snags of large diameter. Avoid leaving isolated strips of timber.

SOILS:

Slopes greater than 72%: The results of an on-site stability investigation determined that unit contains less than 1 acre of soils greater than 72%. Diameter limit prescription will help maintain rooting strength and slope stability (BMP 13.2).

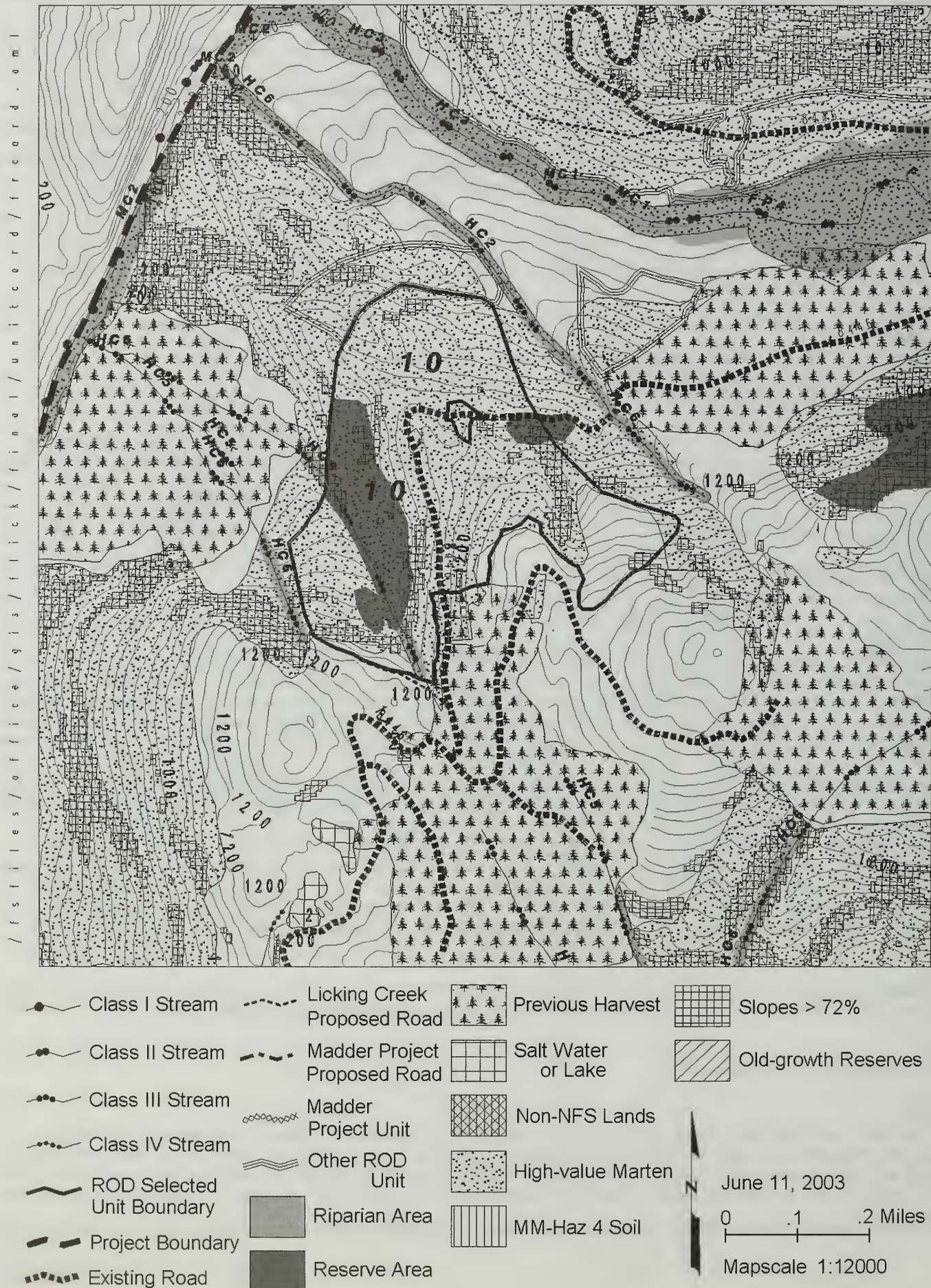
TIMBER:

This unit is designed for helicopter yarding.

WILDLIFE:

Marten Standards and Guidelines apply: leave 10-20% of original stand structure, in areas of high-value marten habitat, averaging four large trees/acre (20-30" dbh), three snags/acre, and three large, downed trees/acre (20-30" dbh). Interagency Bald Eagle MOU applies, due to proximity to beach fringe. There is a seasonal restriction on repeated helicopter flights within 1/4 mile of active nests. Band-tailed pigeons may be present within this proposed unit. Surveys were completed in 2002 with no detections.

Licking Creek Record of Decision Unit: 10



Unit Data Card – Licking Creek Timber Sale Record of Decision

Unit Number:	10	Planned Unit Acres:	81	Silvicultural Prescription:	EACCR		
LUD:	TM, ML	Primary WAA Number:	406	Quad:	KTNC4SW	VCU Number:	74603
		Logging Systems:	Cable	Total Estimated Harvest Volume (CCF):			3,559

HERITAGE RESOURCES:

No resource concerns were identified. If found, avoid rock shelters and walk in caves. H1, H2

ENGINEERING/ROADS:

No resource concerns were identified. Unit will be yarded to Road 8446000. No new road construction is required. See attached road card in Appendix 2.

FISH/WATERSHED:

Class III HC6 East and West: Sideslope Standards and Guidelines or RMA (top of V-notch) buffer is required. F1, F2

Class III HC6 Center: Sideslope Standards and Guidelines or RMA (top of V-notch) buffer is required. F1, F2

GEOLOGY:

A small band of marble containing the karst features lies at the base of a steep (90%) phyllite slope. Due to slope instability evidenced by the failure of phyllite soils and colluvium down into several of the karst features, the unit boundary has been adjusted from the base of the cliffs above the features to the top edge of the cliffs to protect the karst features and stream below (BMPs 13.5 and 13.2). Inventory by other resource specialists has not indicated the presence of other karst features in the unit. If additional features are found during unit layout, the appropriate Standards and Guidelines will be applied.

LANDS: No resource concerns were identified.

RECREATION/SCENERY: Unit is seen from Carroll Inlet from viewing points north of Licking Creek looking south. It is in the middleground zone of a Timber Production LUD. It is seen in combination with parts of Unit 9 and some recently cut units on a ridge to the north. Visual Quality Objective is Maximum Modification. To mitigate visual impact of this unit, recommend reducing its apparent scale by prescribing some kind of group selection on the west side of the stream in the southwest corner of the unit, or by incorporating several acres of retention in the center of the west-facing portion of the unit.

SILVICULTURE:

Vegetation: This is a large stand that has irregular topography. The two dominant aspects are north and west. A managed stand, harvested in 1962, lies to the west of the stand. Unit 9 also border this stand. Dominant plant associations are western hemlock and mixed conifer series. Windthrow potential is low. Mistletoe infections are present in moderate severity.

Stand Management Objective: Stand will be predominantly even-aged with windfirm reserve clumps and scattered trees where possible. Natural regeneration through release of established stems and new tree seedlings is expected to be abundant. Future treatments may include pre-commercial thinning at age 15-25 to promote tree growth and species diversity.

Treatment: Treatment is clearcut with reserves. Leave 10-20% of the stand structure, scattered and/or clumped, throughout the unit which consists of all high-value marten habitat, ensuring that enough large trees (4 per acre >20" dbh) and snags (3 per acre > 20" dbh) are retained to meet the requirements for the standards and guidelines. Reserve areas may be clumped to obtain windfirmness. Maintain reserves in the areas of sensitive plants in the north part of the stand and areas of high-vulnerability karst. Elsewhere, leave areas of low productivity forest, stream buffers, etc. to reduce total opening size, as this unit also borders Unit 9. Where possible, retain all unmerchantable trees throughout the unit, particularly snags and near snags of large diameter. Avoid leaving isolated strips of timber between the borders of managed stands.

Rare and Sensitive Plants: The rare plants *Listera convallarioides* and *Galium kamtschaticum* were found in three locations within Unit 10. The areas have been marked off with flagging to be protected during yarding.

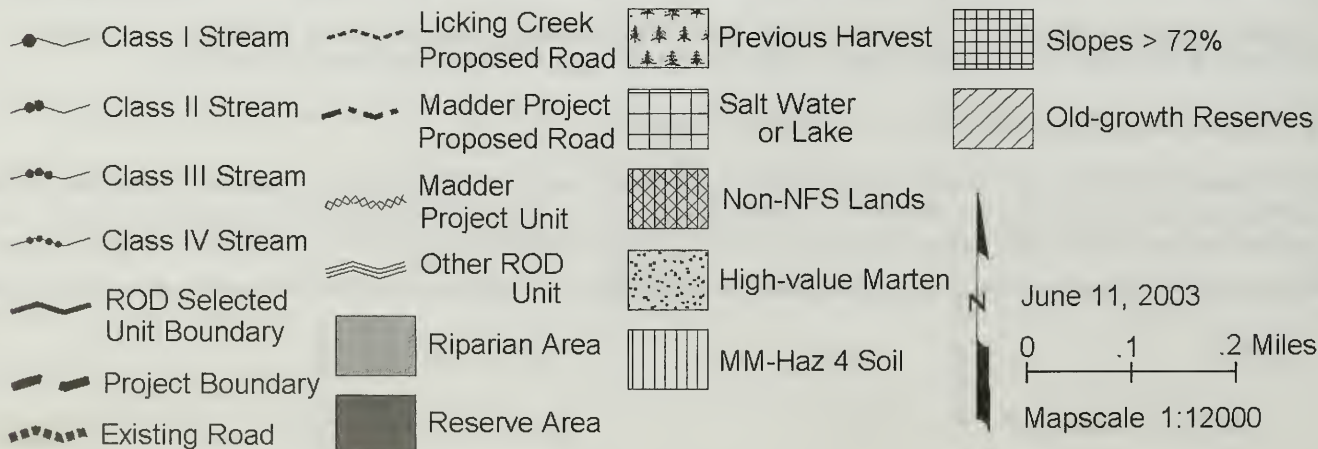
SOILS:

Slopes Greater than 72%: The results of an on-site stability investigation determined that partial suspension is required to protect the steep area below the road (to the west) in the southcentral part of the unit. (BMPs 13.5 and 13.9)

TIMBER: This unit is designed for short and long-span cable yarding.

WILDLIFE: Marten Standards and Guidelines apply: leave 10-20% of original stand structure, in areas of high-value marten habitat, averaging four large trees/acre (20-30" dbh), three snags/acre, and three large, downed trees/acre (20-30"dbh). Band-tailed pigeons may be present within this proposed unit. Surveys were completed in 2002 but no additional sightings were recorded.

Licking Creek Record of Decision Unit: 11



Unit Data Card – Licking Creek Timber Sale Record of Decision							
Unit Number:	11	Planned Unit Acres:	9	Silvicultural Prescription:	EACCR		
LUD:	TM	Primary WAA Number:	406	Quad:	KTNC4SW	VCU Number:	74603
Logging Systems:			Cable	Total Estimated Harvest Volume (CCF):			401

HERITAGE RESOURCES:

No resource concerns were identified. If found, avoid rock shelters and walk in caves. H1, H2

ENGINEERING/ROADS:

No resource concerns were identified. No new road construction is required to harvest unit. Unit will be yarded to existing Road 8446000. See attached road card in Appendix 2.

FISH/WATERSHED:

Class III HC6 South: Sideslope Standards and Guidelines or RMA (top of V-notch) buffer is required. F1, F2

GEOLOGY:

No resource concerns were identified.

LANDS:

No resource concerns were identified.

RECREATION/SCENERY:

No resource concerns were identified.

SILVICULTURE:

Vegetation: Stand is a small, lower-productivity site. It is adjacent to a managed stand, harvested in 1992, along the southeast border. A large muskeg borders stand along the northern boundary. Plant association is mixed conifer/blueberry/skunk cabbage throughout the entire stand, resulting in a varied overstory of western hemlock, red and yellow cedar, and Sitka spruce. Windthrow potential is low. Mistletoe infections are minor, but are affecting nearly all western hemlock in the stand. The overstory western red cedar in the stand are decadent and highly defected.

Stand Management Objective: Stand will be predominantly even-aged with windfirm reserve clumps and scattered trees where possible. Natural regeneration is expected to be abundant. Future treatments may include pre-commercial thinning at age 15-25 to promote tree growth and species diversity.

Treatment: Treatment is clearcut with reserves. Leave 10-20% of the stand structure, scattered and/or clumped, in the areas of the unit that contain high-value marten habitat, ensuring that enough large trees (4 per acre >20" dbh) and snags (3 per acre > 20" dbh) are retained to meet the requirements for the standards and guidelines. Reserve areas may be clumped to obtain windfirmness. Where possible, retain unmerchantable trees throughout the unit, particularly snags and near snags of large diameter. Avoid leaving isolated strips of timber along borders of muskegs, and bordering managed stand.

SOILS:

No resource concerns were identified.

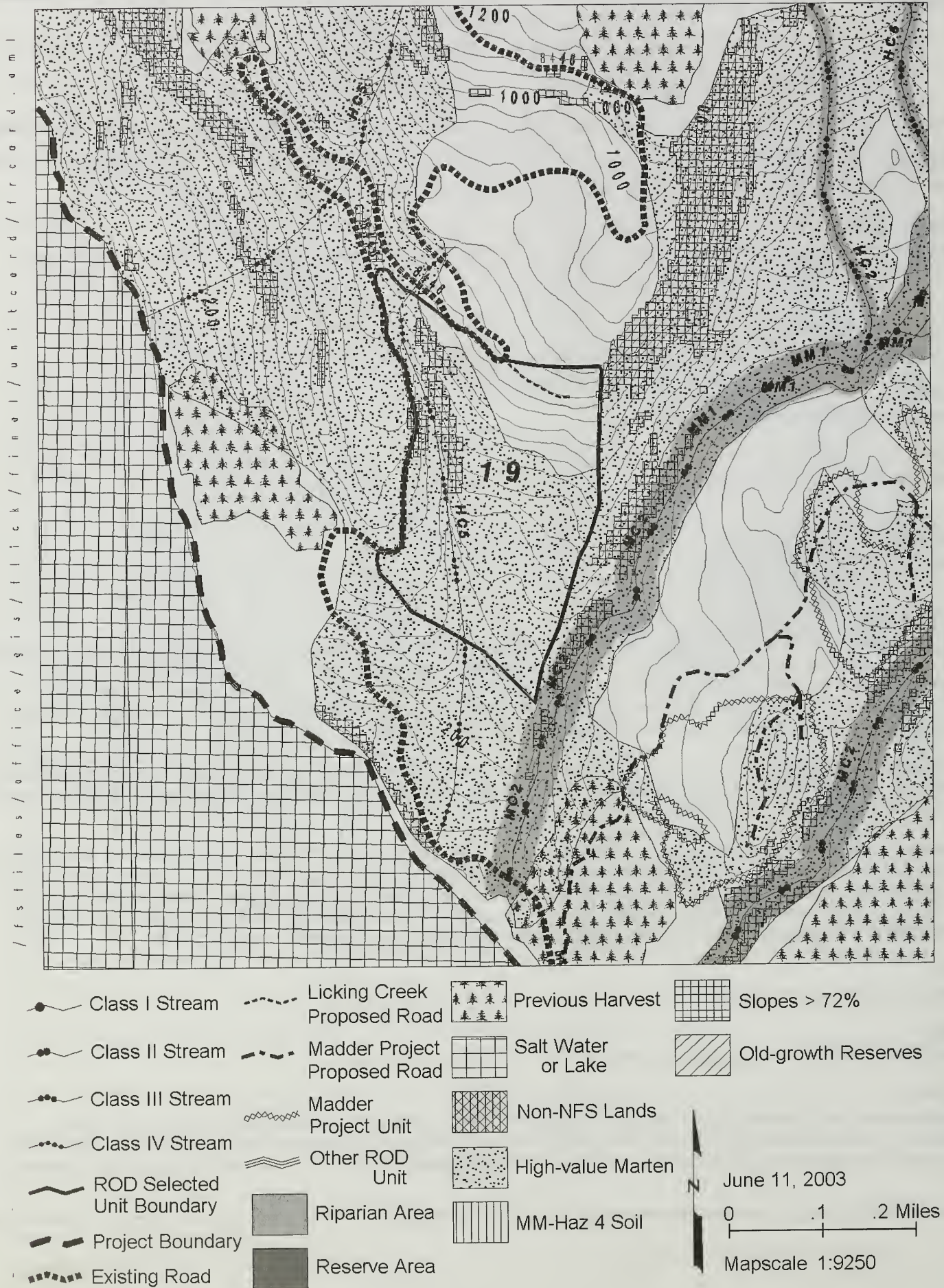
TIMBER:

This unit is designed for short-span cable yarding.

WILDLIFE:

Marten Standards and Guidelines apply: leave 10-20% of original stand structure, in areas of high-value marten habitat, averaging four large trees/acre (20-30" dbh), three snags/acre, and three large, downed trees/acre (20-30" dbh). Band-tailed pigeons may be present within this proposed unit. Surveys were completed in 2002 but no band-tailed pigeons were detected.

Licking Creek Record of Decision Unit: 19



Unit Data Card – Licking Creek Timber Sale Record of Decision

Unit Number:	19	Planned Unit Acres:	42	Silvicultural Prescription:	EACCR GS		
LUD:	ML	Primary WAA Number:	406	Quad:	KTNC4SW	VCU Number:	74603
		Logging Systems:	Cable	Total Estimated Harvest Volume (CCF):			1,838

HERITAGE RESOURCES:

No resource concerns were identified. If found, avoid rock shelters and walk in caves. H1, H2

ENGINEERING/ROADS:

No resource concerns were identified. Unit is scheduled to be harvested from the existing Road 8446000. Temporary roads may be required which would begin at intersections with Road 8446000. See attached road card in Appendix 2.

FISH/WATERSHED:

Class IV HC5 West: Split yarding or partial suspension is required (BMP 13.16 and CT6.51.c). F3, F4

Class II HC2 Southeast: Greater of 100-foot Standards and Guidelines or RMA (top of V-notch) buffer is required. F1, F2

GEOLOGY:

No resource concerns were identified.

LANDS:

No resource concerns were identified.

RECREATION/SCENERY:

This unit sits on foreground slopes directly above Carroll Inlet. It is in a Modified Landscape LUD. Therefore, the Visual Quality Objective is Partial Retention. Almost entire unit is visible. It is recommended that most of the steeper upper slopes include at least 75% retention, while the gentler lower slopes can have much less retention. There should be no more than a couple of 4-6 acre visible openings in this 42-acre stand, with substantial forested texture left in the remaining part of the unit. V1, V6

SILVICULTURE:

Vegetation: Stand is concave in shape and faces south-southwest. Windthrow potential is high in the upper reaches and moderate in the lower reaches. Stand is moderately productive. Overstory is dominated by western hemlock and western red cedar with scattered spruce. Many of the red cedar are very large with high amounts of defect. Plant association transitions to mixed conifer in the lower, south end of the unit. Mistletoe is present throughout entire unit and is mostly minor in severity.

Stand Management Objective: Stand will be predominantly even-aged in the lower and western portions of the unit with windfirm reserve clumps and scattered trees where possible. In a small, upper middle area of the unit, where scenery is a concern, the structure will be multi-aged with 75% of the trees will be retained in this area. Natural regeneration through release of established stems and ingrowth of new stems is expected to be abundant. Future treatments may include pre-commercial thinning at age 15-25 to promote tree growth and species diversity.

Treatment: Treatment is clearcut with reserves in approximately 4/5 of the stand. Leave 25% of the stand structure, scattered, clumped and/or in strips, throughout the unit to maintain structure for scenery and marten habitat. Where possible, retain all unmerchantable trees throughout the unit, particularly snags and near snags of large diameter. In the remainder of the stand, group select, retaining approximately 75% of the trees to address visual concerns. Harvest trees in narrow corridors not to exceed two-tree heights in width, concentrating retention in areas that are visible from saltwater and are less susceptible to windthrow.

SOILS:

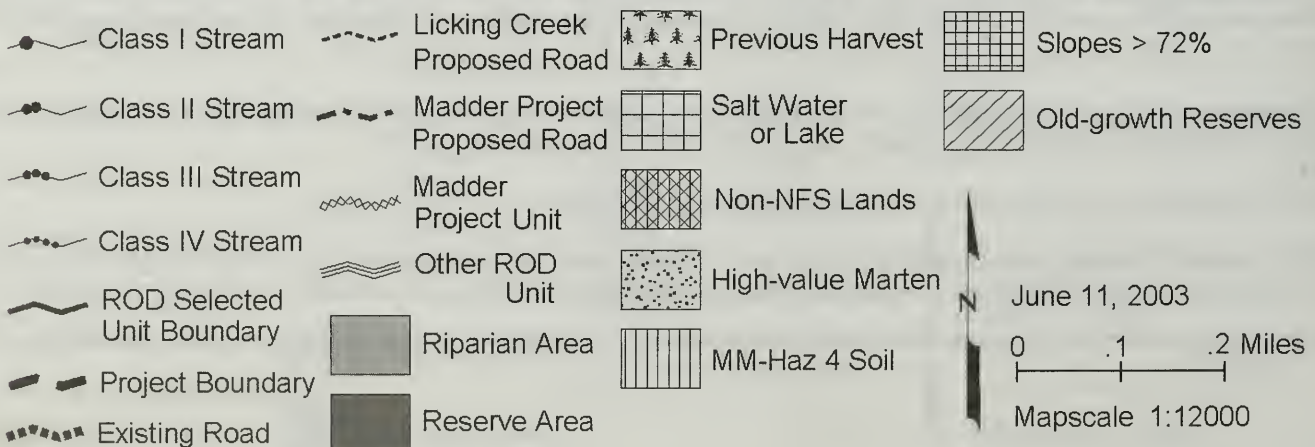
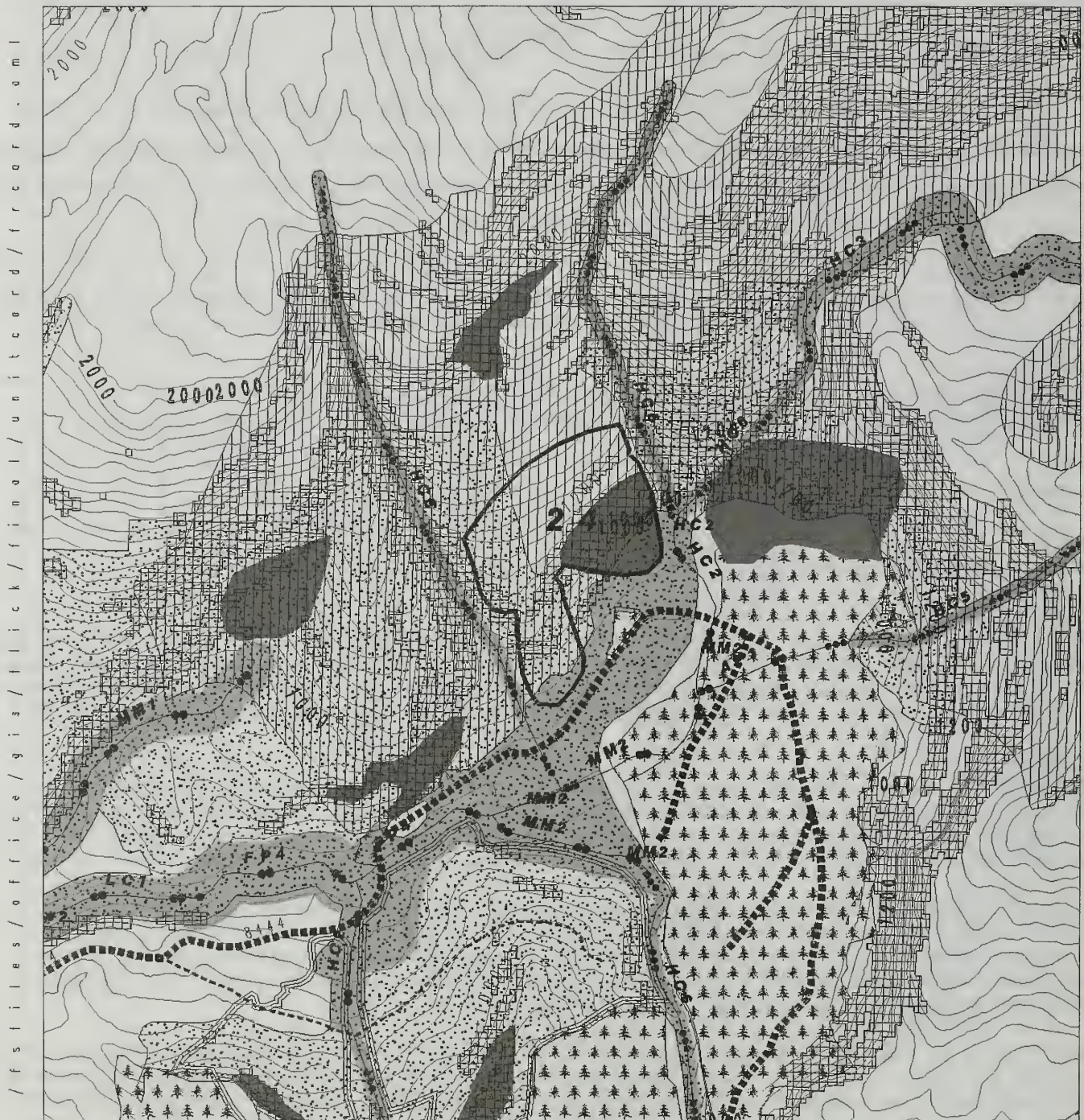
Slopes greater than 72%: The results of an on-site stability investigation determined that full suspension is required to protect the banks of the Class IV stream in the western edge of the unit (BMPs 13.2 and 13.9).

TIMBER:

This unit is designed for a combination of short and long-span cable yarding.

WILDLIFE: Marten Standards and Guidelines apply: leave 10-20% of original stand structure, in areas of high-value marten habitat, averaging four large trees/acre (20-30" dbh), three snags/acre, and three large, downed trees/acre (20-30" dbh).

Licking Creek Record of Decision Unit: 24



Unit Data Card – Licking Creek Timber Sale Record of Decision

Unit Number:	24	Planned Unit Acres:	26	Silvicultural Prescription:	EACCR		
LUD:	TM	Primary WAA Number:	406	Quad:	KTNC4SW	VCU Number:	74603
		Logging Systems:	Helicopter	Total Estimated Harvest Volume (CCF):			1,140

HERITAGE RESOURCES:

No resource concerns were identified. If found, avoid rock shelters and walk in caves. H1, H2

ENGINEERING/ROADS:

Logs will be helicopter yarded to Road 8445000. See attached road cards in Appendix 2.

FISH/WATERSHED:

Class II HC2 East: Greater of 100-foot Standards and Guidelines or RMA (top of V-notch) buffer is required. F1 F2

Class III HC6 East: Sideslope Standards and Guidelines or RMA (top of V-notch) buffer is required. F1, F2

Class III HC6 West: Sideslope Standards and Guidelines or RMA (top of V-notch) buffer is required. F1, F2

GEOLOGY:

No resource concerns were identified.

LANDS:

No resource concerns were identified.

RECREATION/SCENERY:

Upper part of unit is slightly visible from viewing positions south of the mouth of Calamity Creek. It is in middleground of Timber Production LUD. The Visual Quality Objective is Maximum Modification.

SILVICULTURE:

Vegetation: This is a productive unit with steep slopes interspersed with benches. It has a southeast aspect and faces a large drainage area that has been harvested. Overstory is dominated by western hemlock, displaying even-aged characteristics in the lower reaches of the unit. The upper reaches are characterized by a Sitka spruce plant association. Devil's club is a dominant component of the understory. Wind has played a role in stand development—most of the unit is in understory reinitiation phase. Mistletoe is minor.

Stand Management Objective: Stand will be predominantly even-aged with windfirm reserve clumps and scattered trees where possible. Natural regeneration is expected to be abundant. Future treatments may include pre-commercial thinning at age 15-25 to promote tree growth and species diversity.

Treatment: Treatment is clearcut with reserves. Leave 10-20% of the stand structure, scattered and/or clumped, in areas of high-value marten habitat within the stand, ensuring that enough large trees (4 per acre >20" dbh) and snags (3 per acre > 20" dbh) are retained to meet the requirements for the standards and guidelines. Reserve areas may be clumped to obtain windfirmness. The southeast corner of the unit that is to be excluded from harvest may count as reserve for meeting marten standards and guidelines. Where possible, retain unmerchantable trees throughout the unit, particularly snags and near snags of large diameter. Avoid leaving isolated strips of standing timber.

SOILS:

Slopes Greater than 72%: The results of an on-site stability investigation determined that the southeast corner of the unit consists of slopes ranging from 80-95%. This corner of the unit will be excluded to avoid steep slopes with potentially unstable soil (BMPs 13.2 and 13.5). The remainder of the unit, on slopes less than 85%, is appropriate for harvest, but partial suspension is required to protect unstable soils (BMPs 13.2 and 13.9).

No timber harvest will occur within the RMA buffer in the SW corner of the unit.

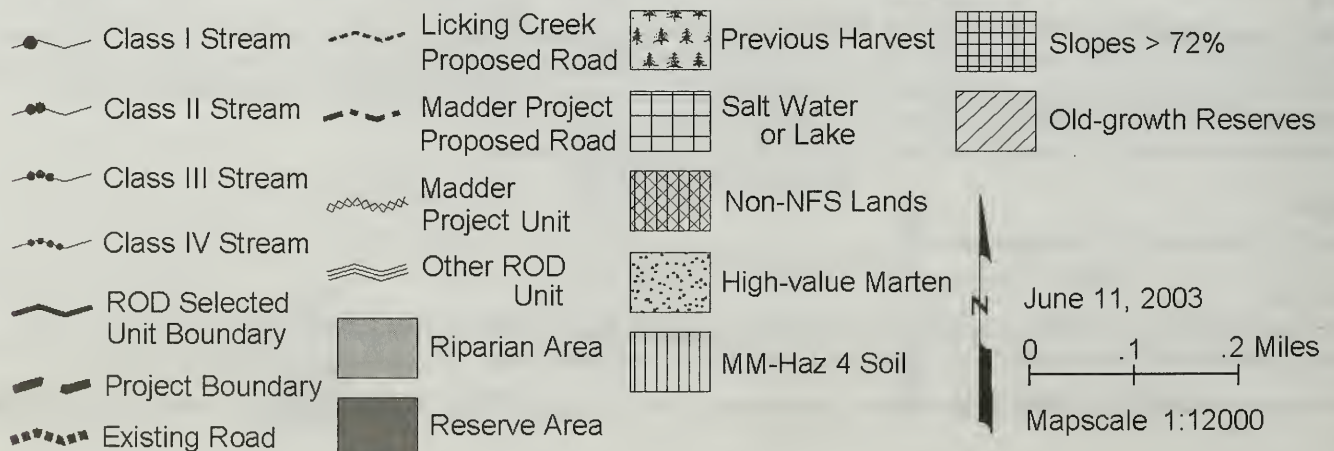
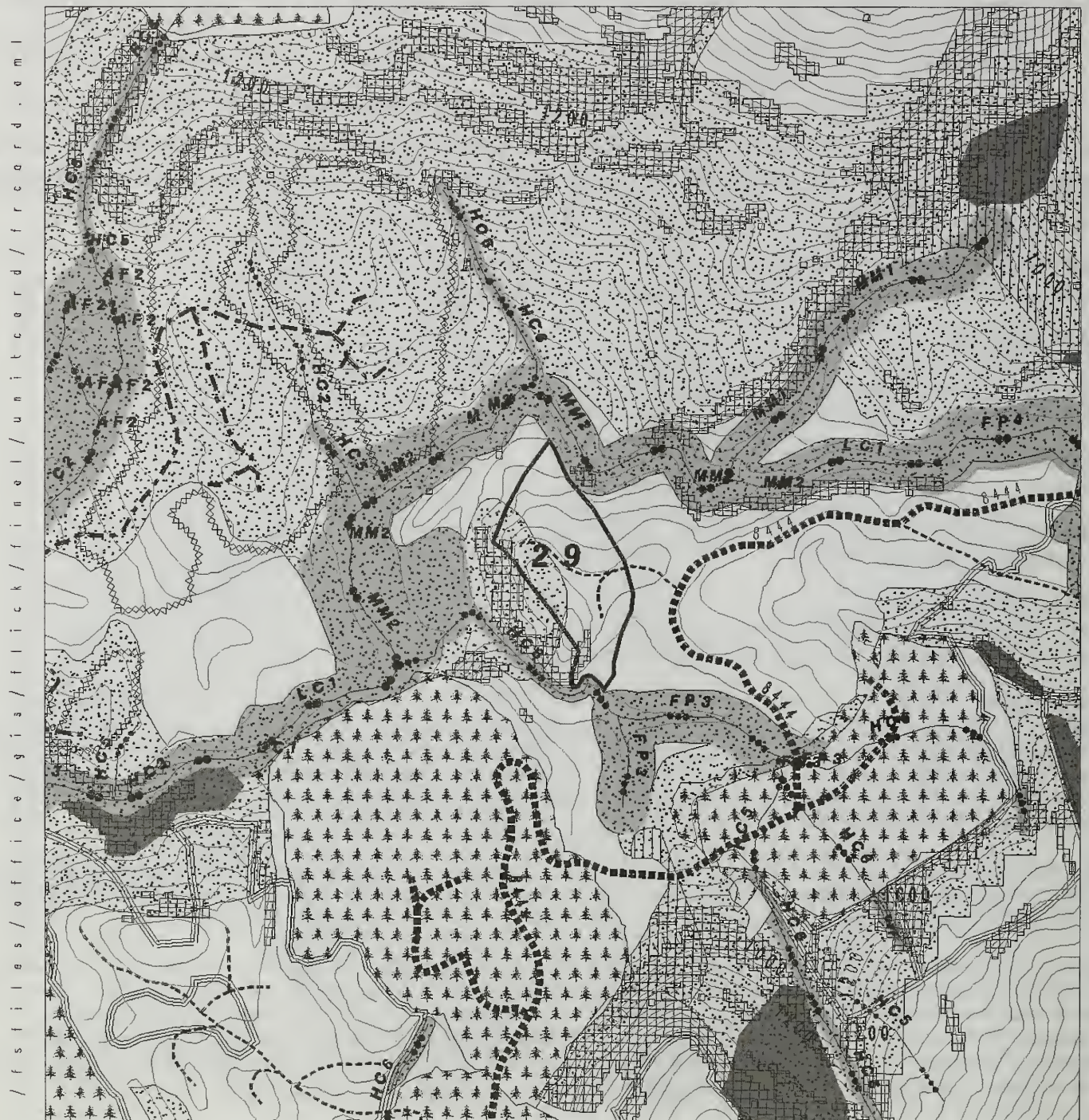
TIMBER:

This unit is designed for helicopter yarding.

WILDLIFE:

Marten Standards and Guidelines apply: leave 10-20% of original stand structure, in areas of high-value marten habitat, averaging four large trees/acre (20-30" dbh), three snags/acre, and three large, downed trees/acre (20-30" dbh).

Licking Creek Record of Decision Unit: 29



Unit Data Card – Licking Creek Timber Sale Record of Decision

Unit Number:	29	Planned Unit Acres:	15	Silvicultural Prescription:	CC		
LUD:	TM	Primary WAA Number:	406	Quad:	KTNC4SW	VCU Number:	74604
		Logging Systems:	Cable	Total Estimated Harvest Volume (CCF):			625

HERITAGE RESOURCES:

No resource concerns were identified. If found, avoid rock shelters and walk in caves. H1, H2

ENGINEERING/ROADS:

No resource concerns were identified. No new road construction is needed to harvest the unit. A temporary road will be constructed from an intersection with Road 8444000. See attached road card in Appendix 2.

FISH/WATERSHED:

Class II MM2 North and East: Greater of 120-foot or RMA buffer is required. F1, F2

Class III HC5 West: Sideslope Standard and Guideline or RMA (top of V-notch) buffer is required. F1, F2

GEOLOGY:

No resource concerns were identified.

LANDS:

No resource concerns were identified.

RECREATION/SCENERY:

No resource concerns were identified.

SILVICULTURE:

Vegetation: Stand is small, moderately productive and varied in forest type. Western hemlock, Sitka spruce, yellow cedar, and western red cedar all comprise the overstory. Windthrow potential is moderate to high. Mistletoe is present throughout the entire stand in moderate to severe infections.

Stand Management Objective: Stand will be predominantly even-aged with some reserve clumps and scattered trees in the southwestern portion of unit. Natural regeneration is expected to be abundant. Future treatments may include pre-commercial thinning at age 15-25 to promote tree growth and species diversity.

Treatment: Apply a clearcut prescription. There is a an area of high-value marten habitat within the unit, in the southwestern area of the unit. Maintain 10-20% of the stand structure in this area, ensuring that enough large trees (4 per acre >20" dbh) and snags (3 per acre > 20" dbh) are retained to meet the requirements for the standards and guidelines. This prescription will reduce mistletoe, maximize economic return, and minimize risk of windthrow. If possible, retain unmerchantable trees throughout the unit, particularly snags and near snags of large diameter.

Rare and Sensitive Plants: The rare plant *Listera convallariodes* was found just outside the unit boundary. If possible, retain or use directional falling of the large spruce above the population to protect habitat.

SOILS:

Slopes greater than 72%: Slopes greater than 72% will be placed in reserve from timber harvest (BMPs 13.2 and 13.5).

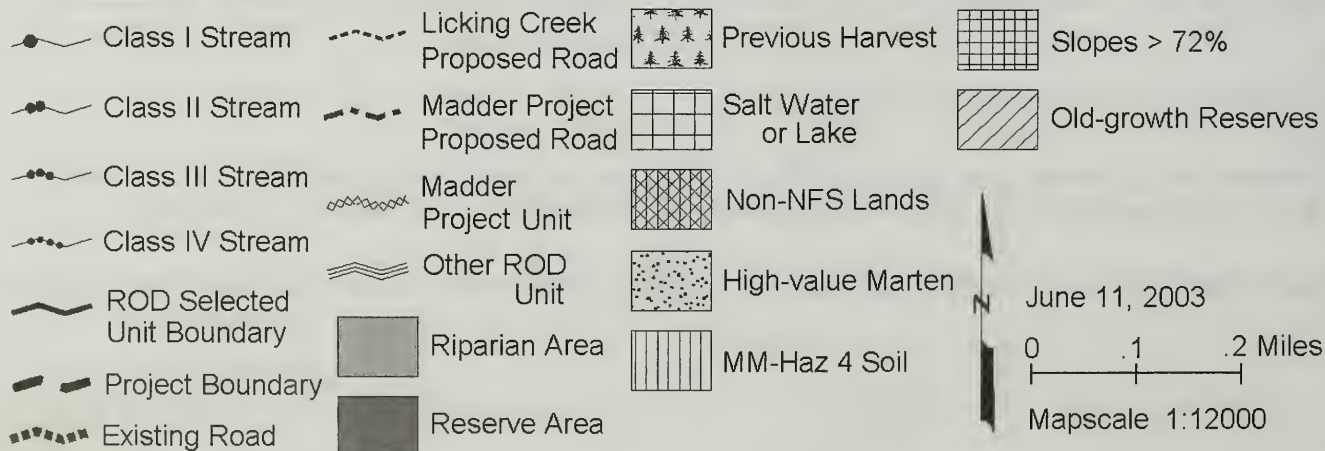
TIMBER:

This unit is designed for short-span cable yarding.

WILDLIFE:

Marten Standards and Guidelines apply: leave 10-20% of original stand structure, in areas of high-value marten habitat, averaging four large trees/acre (20-30" dbh), three snags/acre, and three large, downed trees/acre (20-30" dbh).

Licking Creek Record of Decision Unit: 31



Unit Data Card – Licking Creek Timber Sale Record of Decision

Unit Number:	31	Planned Unit Acres:	61	Silvicultural Prescription:	EACCR		
LUD:	TM, ML	Primary WAA Number:	406	Quad:	KTNC4SW	VCU Number:	74604
		Logging Systems:	Cable	Total Estimated Harvest Volume (CCF):		2,633	

HERITAGE RESOURCES:

No resource concerns were identified. If found, avoid rock shelters and walk in caves. H1, H2

ENGINEERING/ROADS:

No resource concerns were identified. New road construction of Road 8444200 accesses this unit. The road leaves existing Road 8444000 such that it can cross the drainage at a favorable location and climbs to a control point. Continue to stay below steep sideslope sections to limit need to excavate for the road prism. Some endhaul of excavated materials may be needed in Unit 31 near the terminus of the road as sideslopes approach 65%. See attached road cards in Appendix 2.

FISH/WATERSHED:

Class II FP4 North: Greater of 130-foot or floodplain RMA buffer is required. F1, F2

Class II MM2 Northeast: Greater of 120-foot or floodplain RMA buffer is required. F1, F2

Class III HC6 East: Sideslope Standard and Guideline buffer (top of V-notch) is to form unit boundary. F1, F2

Class II HC2 West: Greater of 100-foot or RMA (top of V-notch) buffer is required. F1, F2

Class III HC6 West: Sideslope Standard and Guideline buffer (top of V-notch) is to form unit boundary. F1, F2

GEOLOGY:

No resource concerns were identified.

LANDS:

No resource concerns were identified.

RECREATION/SCENERY:

No resource concerns were identified.

SILVICULTURE:

Vegetation: This stand is adjacent to two managed stands, to the east and southeast, that were both harvested in 1989. This stand is also adjacent to proposed Licking Creek Units 34 and 35. Wind disturbance is prevalent in the stand, caused by the large openings created by the bordering managed stands. Stand development stage is understory reinitiation. Overstory is dominated by western and mountain hemlock with scattered, large spruce. Mistletoe was found throughout the stand in minor to moderate severity.

Stand Management Objective: Stand will be predominantly even-aged with windfirm reserve clumps and scattered trees where possible. Natural regeneration is expected to be abundant. Future treatments may include pre-commercial thinning at age 15-25 to promote tree growth and species diversity.

Treatment: Treatment is clearcut with reserves. Leave 10-20% of the stand structure, scattered and/or clumped, in the areas of the unit that contain high-value marten habitat, ensuring that enough large trees (4 per acre >20" dbh) and snags (3 per acre > 20" dbh) are retained to meet the requirements for the standards and guidelines. The small, steep section in the south end of the unit that is to be excluded from harvest to address soils concerns may count as reserve in meeting marten standards and guidelines. Reserve areas may be clumped to obtain windfirmness. Elsewhere, leave areas of low productivity forest, stream buffers, etc. to reduce total opening size, as this unit also borders Unit 34. Where possible, retain unmerchantable trees throughout the unit, particularly snags and near snags of large diameter. Avoid leaving isolated strips of timber between the borders of managed stands, especially along the border with the managed stand that lies to the southeast.

SOILS:

Slopes Greater than 72%: The results of an on-site stability investigation determined that a small, steep section in the south end of the unit will be reserved from harvest due to evidence of previous landslides (exposed bedrock) demonstrating this section to be unsuitable for harvest (BMPs 13.2 and 13.5).

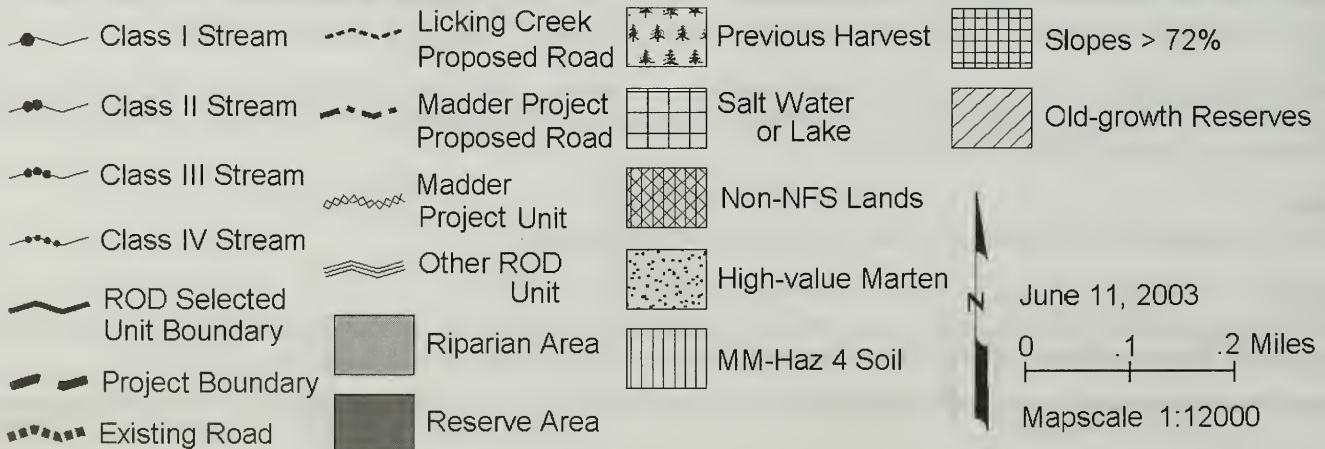
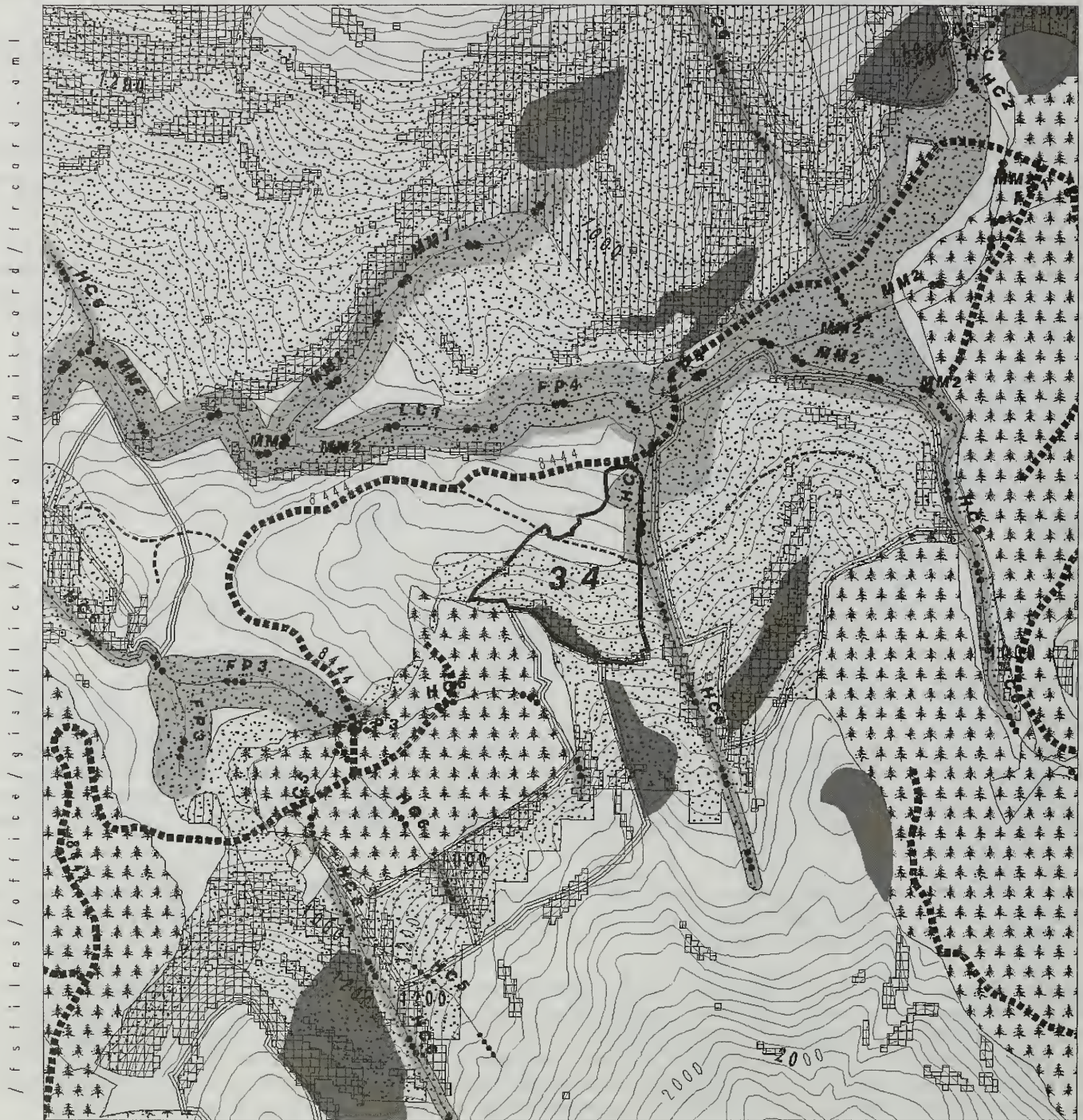
TIMBER:

This unit is designed for a combination of short and long-span cable logging.

WILDLIFE:

Marten Standards and Guidelines apply: leave 10-20% of the original stand structure in areas of high-value marten habitat, averaging four large trees/acre (20-30" dbh), three snags/acre, and three large downed trees/acre of 20-30" dbh.

Licking Creek Record of Decision Unit: 34



Unit Data Card – Licking Creek Timber Sale Record of Decision

Unit Number:	34	Planned Unit Acres:	16	Silvicultural Prescription:	EACCR		
LUD:	TM, ML	Primary WAA Number:	406	Quad:	KTNC4SW	VCU Number:	74604
		Logging Systems:	Cable	Total Estimated Harvest Volume (CCF):			653

HERITAGE RESOURCES:

No resource concerns were identified. If found, avoid rock shelters and walk in caves. H1, H2

ENGINEERING/ROADS:

No resource concerns were identified. New road construction of Road 8444200 begins at an intersection with existing Road 8444000 such that it can cross a drainage at a favorable location. It climbs to a control point and continues following a contour to the landing. Construction is moderate to easy and no steep sideslopes occur.

FISH/WATERSHED:

Class III HC6 Southeast: Sideslope Standard and Guideline RMA (top of V-notch) buffer is required. F1, F2

Class II HC2 Northeast: Greater of 100-foot or RMA (top of V-notch) buffer is required. F1, F2

GEOLOGY:

Harvest method that achieves partial suspension is required to prevent soil disturbance and thus protect karst development of moderate vulnerability (BMP 13.9).

LANDS:

No resource concerns were identified.

RECREATION/SCENERY:

No resource concerns were identified.

SILVICULTURE:

Vegetation: This stand is bordered to the east by a V-notch stream, to the south by proposed Unit 35 and to the southwest by a managed stand which was harvested in 1990. Overstory is dominated by western hemlock and Sitka spruce with yellow cedar as a minor component. The northwest portion of the unit is low in productivity and muskeg-like. Windthrow damage was evident in the southern portion of the unit, particularly along the ridgeline on the southeast border and along the adjacent managed stand on the southwest border. Mistletoe infections are minor in hemlock throughout unit. Cedar decline is present in one small area within stand.

Stand Management Objective: Stand will be predominantly even-aged with windfirm reserve clumps and scattered trees where possible. Natural regeneration is expected to be abundant. Future treatments may include pre-commercial thinning at age 15-25 to promote tree growth and species diversity.

Treatment: Treatment is clearcut with reserves. Leave 10-20% of the stand structure, scattered and/or clumped, in the areas of the unit that contain high-value marten habitat, ensuring that enough large trees (4 per acre >20" dbh) and snags (3 per acre > 20" dbh) are retained to meet the requirements for the standards and guidelines. Areas to be excluded from harvest to address soils concern may count towards reserve for meeting marten standards and guidelines. Reserve areas may be clumped to obtain windfirmness. Elsewhere, leave areas of low-productivity forest, stream buffers, etc. to reduce total opening size, as this unit also borders Units 31 and 35. Where possible, retain unmerchantable trees throughout the unit, particularly snags and near snags of large diameter. Avoid leaving isolated strips of timber between the borders of managed stands. Avoid the northwest corner of the unit that is close to non-commercial forest during layout.

SOILS:

Slopes Greater than 72%: The results of an on-site stability investigation determined that the steep area on the west side of the unit be deferred or excluded from the unit to avoid 1/2-acre rock outcrop and associated McGilvery soils (BMPs 13.2 and 13.5). Steep V-notch on east side of unit is to have a windfirm buffer (BMP 13.2).

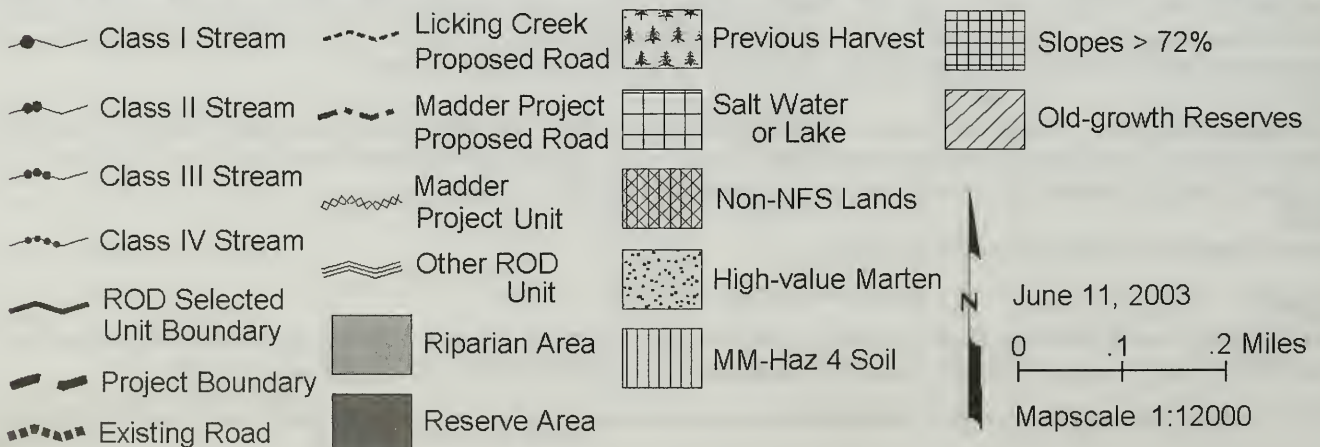
TIMBER:

This unit is designed for short-span cable yarding.

WILDLIFE:

Marten Standards and Guidelines apply: leave 10-20% of original stand structure, in areas of high-value marten habitat, averaging four large trees/acre (20-30" dbh), three snags/acre, and three large, downed trees/acre (20-30" dbh).

Licking Creek Record of Decision Unit: 35



Unit Data Card – Licking Creek Timber Sale Record of Decision

Unit Number:	35	Planned Unit Acres:	25	Silvicultural Prescription:	EACCR		
LUD:	ML, TM	Primary WAA Number:	406	Quad:	KTNC4SW	VCU Number:	74604
		Logging Systems:	Helicopter	Total Estimated Harvest Volume (CCF):			1,074

HERITAGE RESOURCES:

No resource concerns were identified. If found, avoid rock shelters and walk in caves. H1, H2

ENGINEERING/ROADS:

No resource concerns were identified. No roads will be constructed to harvest this unit.

FISH/WATERSHED:

Class III HC6 East: Sideslope Standard and Guideline buffer (top of V-notch) is to form unit boundary. F1, F2

Class III HC6 West: Sideslope Standard and Guideline RMA (top of V-notch) buffer is required. F1, F2

GEOLOGY:

The steep, unstable phyllite slopes that drain directly into the high-vulnerability karst systems to the east have been deleted from consideration for harvest.

LANDS:

No resource concerns were identified.

RECREATION/SCENERY:

No resource concerns were identified.

SILVICULTURE:

Vegetation: Topography is irregular with rolling, benchy terrain and many small ridges and V-notches. The stand is dominated by western hemlock and Sitka spruce. Windthrow potential is varied, from low to high potential, throughout the stand. The northwest boundary is adjacent to a managed stand which was harvested in 1990. Mistletoe and cedar decline is present in some areas throughout the stand in minor severities.

Stand Management Objective: Stand will be predominantly even-aged with windfirm reserve clumps and scattered trees where possible. Natural regeneration is expected to be abundant. Future treatments may include pre-commercial thinning at age 15-25 to promote tree growth and species diversity.

Treatment: Treatment is clearcut with reserves. Leave 10-20% of the stand structure, scattered and/or clumped, in the areas of the unit that contain high-value marten habitat, ensuring that enough large trees (4 per acre >20" dbh) and snags (3 per acre >20" dbh) are retained to meet the requirements for the standards and guidelines. Reserve areas may be clumped to obtain windfirmness. Elsewhere, leave areas of low productivity forest, stream buffers, etc. to reduce total opening size, as this unit also borders Units 31 and 39. Where possible, retain unmerchantable trees throughout the unit, particularly snags and near snags of large diameter. Avoid leaving isolated strips of timber between the borders of managed stands.

Rare and Sensitive Plants: The rare plant *Listera convallarioides* was found in one location within Unit 35. The area has been marked off with flagging to be protected during yarding.

SOILS:

Slopes greater than 72%: Slopes greater than 72% will be placed in reserve from timber harvest.

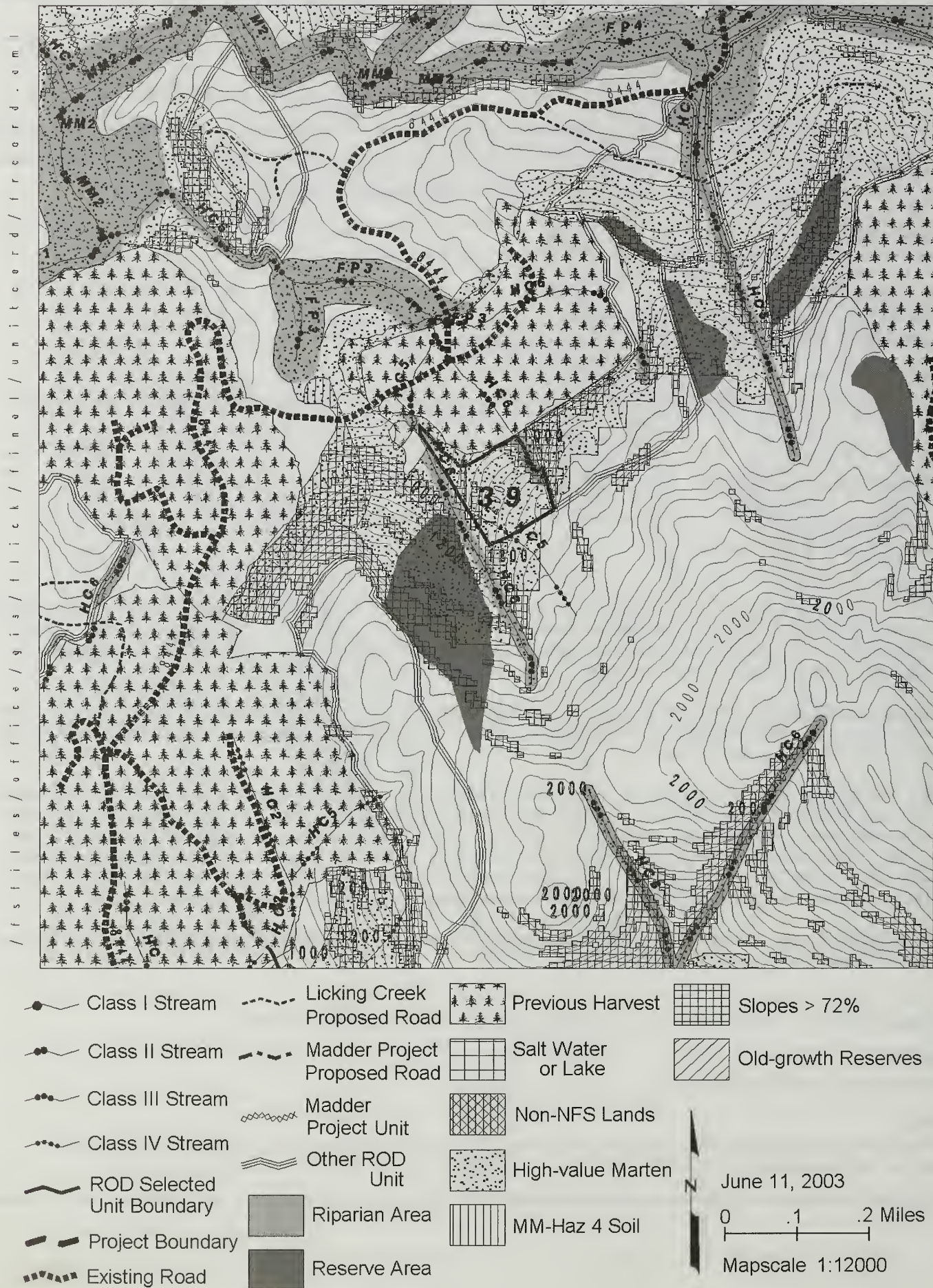
TIMBER:

This unit is designed for helicopter yarding.

WILDLIFE:

Marten Standards and Guidelines apply: leave 10-20% of original stand structure, in areas of high-value marten habitat, averaging four large trees/acre (20-30" dbh), three snags/acre, and three large, downed trees/acre (20-30" dbh).

Licking Creek Record of Decision Unit: 39



Unit Data Card – Licking Creek Timber Sale Record of Decision

Unit Number:	39	Planned Unit Acres:	9	Silvicultural Prescription:	EACCR		
LUD:	ML	Primary WAA Number:	406	Quad:	KTNC4SW	VCU Number:	74604
		Logging Systems:	Helicopter	Total Estimated Harvest Volume (CCF):			370

HERITAGE RESOURCES:

No resource concerns were identified. If found, avoid rock shelters and walk in caves. H1, H2

ENGINEERING/ROADS:

No resource concerns were identified. Timber will be harvested by helicopter yarding to Road 8444000. See attached road card for Road 8444000 in Appendix 2.

FISH/WATERSHED:

Class III HC6 West: Sideslope Standard and Guideline buffer (top of V-notch) is to form unit boundary. F1, F2

Class III HC6 Northeast: Sideslope Standard and Guideline buffer (top of V-notch) is to form unit boundary. F1, F2

Class IV HC5 Center to West: Fall trees away from streamcourse; split yarding or partial suspension is required (BMP 13.6 and CT6.51c). F3, F4

GEOLOGY:

No resource concerns were identified.

LANDS:

No resource concerns were identified.

RECREATION/SCENERY:

No resource concerns were identified.

SILVICULTURE:

Vegetation: Topography is fairly irregular and incised, with many draws, notches, and spur ridges. Stand is bordered by a managed stand, harvested in 1990, on the north boundary. Windthrow is evident as a result of the harvested opening. Windthrow potential is high to moderate throughout entire unit. The unit is varied, with western hemlock, red cedar, and yellow cedar in the overstory. Mistletoe and yellow cedar decline are present in scattered areas only.

Stand Management Objective: Stand will be predominantly even-aged with windfirm reserve clumps and scattered trees where possible. Natural regeneration is expected to be abundant. Future treatments may include pre-commercial thinning at age 15-25 to promote tree growth and species diversity.

Treatment: Treatment is clearcut with reserves. Leave 10-20% of the stand structure, scattered and/or clumped, throughout areas of the unit that contain high-value marten habitat, ensuring that enough large trees (4 per acre >20" dbh) and snags (3 per acre > 20" dbh) are retained to meet the requirements for the standards and guidelines. Elsewhere, leave areas of low-productivity forest, stream buffers, etc. to reduce total opening size, as this unit also borders Unit 35. Reserve areas may be clumped to obtain windfirmness. Where possible, retain unmerchantable trees throughout the unit, particularly snags and near snags of large diameter. Avoid leaving isolated strips of timber between the borders of managed stands.

SOILS:

Slopes greater than 72%: No harvest on slopes greater than 72% will occur.

TIMBER:

This unit is designed for helicopter yarding.

WILDLIFE:

Marten Standards and Guidelines apply: leave 10-20% of original stand structure, in areas of high-value marten habitat, averaging four large trees/acre (20-30" dbh), three snags/acre, and three large, downed trees/acre (20-30" dbh).

Licking Creek Record of Decision Unit: 40



Unit Data Card – Licking Creek Timber Sale Record of Decision

Unit Number:	40	Planned Unit Acres:	39	Silvicultural Prescription:	CC EACCR		
LUD:	ML	Primary WAA Number:	406	Quad:	KTNC4SW	VCU Number:	74604
		Logging Systems:	Helicopter	Total Estimated Harvest Volume (CCF):			1,728

HERITAGE RESOURCES:

No resource concerns were identified. If found, avoid rock shelters and walk in caves. H1, H2

ENGINEERING/ROADS:

No resource concerns were identified. Timber will be harvested by helicopter to Road 8444000. See road card in Appendix 2.

FISH/WATERSHED:

Class IV HC5 Center to West (2 each): Fall trees away from streamcourse; split yarding or partial suspension is required. F3, F4

Class III HC6 Southwest: Sideslope Standard & Guideline or RMA (top of V-notch) buffer is required. F1, F2

Class III HC6 Northeast: Sideslope Standard & Guideline or RMA (top of V-notch) buffer is required. F1, F2

GEOLOGY:

This unit is underlain by dolomitic marble. Streams run on the surface or for short distances underground before resurfacing. The vulnerability of most of the karst systems in this unit is moderate. The soils are thinner towards the top of the knobs on the landscape. To minimize soil disturbance during yarding, partial suspension is required (BMP 13.9). If features are found during unit layout, the appropriate Standards and Guidelines will be applied.

LANDS:

No resource concerns were identified.

RECREATION/SCENERY:

Unit sits on ridgetop in the middleground of a Modified Landscape LUD. The visual quality objective is Modification. Roughly the northern 2/3 of unit lies directly above an old unit harvested about 25 years ago that sits on a steep slope facing Carroll Inlet. The backline of this unit is still clearly evident. Harvest as many trees as possible down to this old clearcut to remove impact of backline. Southern 1/3 of unit is on steeper slopes. Retain enough forested texture in this stand so as not to add to the impact of the extensive old harvest that is still highly visible on the slopes below Unit 40, and a Madder sale unit that will be visible. Recommend retaining about 30% of the southern 1/3 of unit. V4

SILVICULTURE:

Vegetation: This stand lies above a managed stand, harvested in 1974, that borders along the west side. Topography is irregular with areas of steep slopes present. Plant associations are varied, including these plant association types: mountain hemlock, Sitka spruce-mountain hemlock, western hemlock and mixed conifer. Windthrow potential is moderate to high throughout, particularly in the south part of the stand.

Stand Management Objective: The southern 1/3 of the unit, where scenery is a concern, will be managed as even-aged with windfirm reserve clumps and scattered trees. The northern 2/3 of the unit will be even-aged. Regeneration through release of established stems and new seedlings is expected to be abundant. Future treatments may include pre-commercial thinning at age 15-25 to promote tree growth and species diversity.

Treatment: Treatment is even-aged clearcut with reserves in the southern 1/3 of the unit. Leave 20-30% of the stand structure, scattered and/or clumped throughout areas of visual concern in southern portion of the unit. Apply a clearcut prescription to the rest of the unit (northern 2/3). This prescription will reduce mistletoe, maximize economic return, and minimize risk of windthrow. Where possible, retain unmerchantable trees throughout the unit, particularly snags and near snags of large diameter. Avoid leaving isolated strips of timber between the borders of managed stands.

SOILS:

No resource concerns were identified during an on-site investigation.

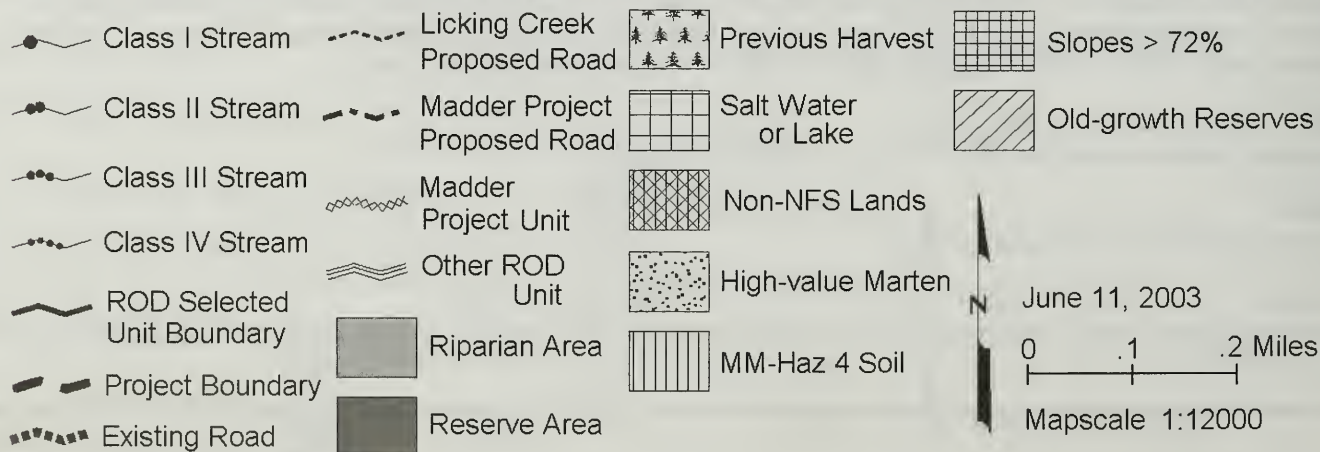
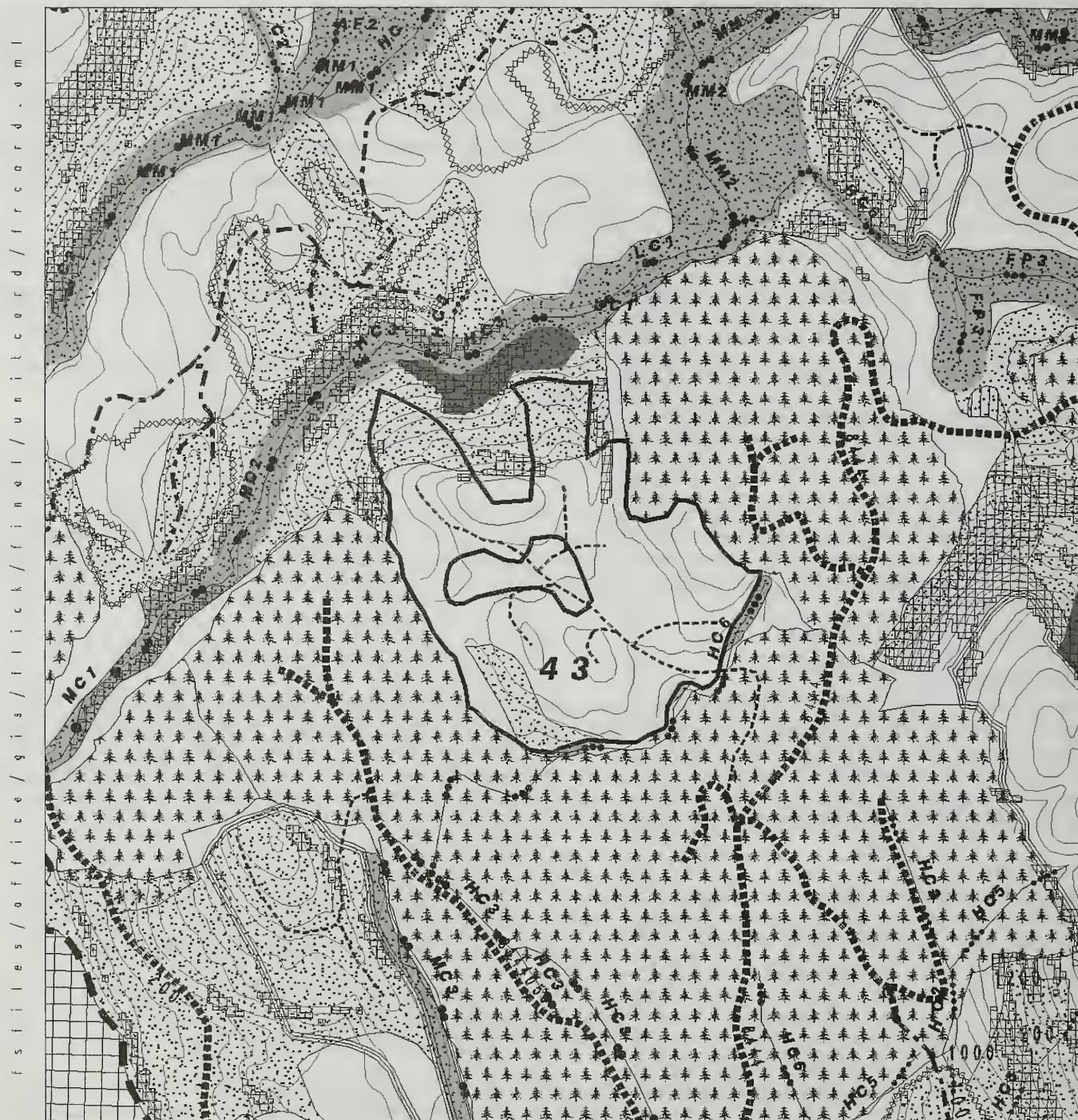
TIMBER:

This unit is designed for helicopter yarding.

WILDLIFE:

There are less than 2 acres of high-value marten habitat within the unit; therefore, Marten Standards and Guidelines do not apply in this unit.

Licking Creek Record of Decision Unit: 43



Unit Data Card – Licking Creek Timber Sale Record of Decision

Unit Number:	43	Planned Unit Acres:	71	Silvicultural Prescription:	CC		
LUD:	ML	Primary WAA Number:	406	Quad:	KTNC4SW	VCU Number:	74604
		Logging Systems:	Cable and Shovel	Total Estimated Harvest Volume (CCF):			3,024

HERITAGE RESOURCES:

No resource concerns were identified. If found, avoid rock shelters and walk in caves. H1, H2

ENGINEERING/ROADS:

No resource concerns were identified. See road card in Appendix 2. Road 8444060 is new construction and accesses entire unit. Short temporary roads may be necessary. Road 8444060 begins at an intersection with Road 8444000. Road construction is moderate to easy. No sections of road are on steep sideslopes. Road crosses a muskeg wetland in the center of the unit (which is excluded from timber harvest).

FISH/WATERSHED:

Class III HC6 South: Sideslope Standard & Guideline or RMA (top of V-notch) buffer is required. F1, F2

Class II HC3 North: Greater of 100-foot or RMA (top of V-notch) buffer is required. F1, F2

GEOLOGY:

No resource concerns were identified.

LANDS:

No resource concerns were identified.

RECREATION/SCENERY:

This unit encompasses two small knobs which are visible from several viewpoints along Carroll Inlet. Very little visible backline edge will be created. This unit will contribute to meeting the Modification Visual Quality Objective that applies to this area.

SILVICULTURE:

Vegetation: Stand has very irregular topography: areas of steep, even slopes in the north, knobs, rolling terrain, and a couple of draws in the southern 2/3 of stand. The northern 1/3 is the most productive site with a western hemlock-dominated overstory and occasional Sitka spruce. The rest of stand is low to moderately productive with western hemlock dominating the overstory with pockets of red and yellow cedar. Windthrow potential is low to moderate throughout the stand. Mistletoe infections are present throughout in moderate to severe infections, particularly in the lower 1/2 of crowns. One area of severe yellow cedar decline was found. Stand is surrounded on 3 sides by managed stands: The eastern managed stand was harvested in 1990. The other managed stand was harvested in 1974.

Stand Management Objective: Stand will be even-aged with areas of windfirm reserve clumps and scattered trees. Natural regeneration is expected to be abundant. Future treatments may include pre-commercial thinning at age 15-25 to promote tree growth and species diversity.

Treatment: Apply a clearcut prescription. There are two areas of high-value marten habitat within the unit: in the southwest corner and in the northern area. Maintain 10-20% of the stand structure in these areas, ensuring that enough large trees (4 per acre >20" dbh) and snags (3 per acre > 20" dbh) are retained to meet the requirements for the standards and guidelines. This prescription will reduce mistletoe, maximize economic return, and minimize risk of windthrow. If possible, retain unmerchantable trees throughout the unit, particularly snags and near snags of large diameter. Avoid leaving isolated strips of timber between the borders of managed stands.

Rare and Sensitive Plants: The rare plants *Listera convallarioides* and *Galium kamtschaticum* were found in one location within Unit 43. The area has been marked off with flagging to be protected during yarding.

SOILS:

Slopes greater than 72%: The results of an on-site stability investigation determined that unit contains small inclusions of slopes greater than 72%, totalling less than an acre which showed no evidence of slumping or mass movement. Therefore, no specific harvest guidelines are recommended.

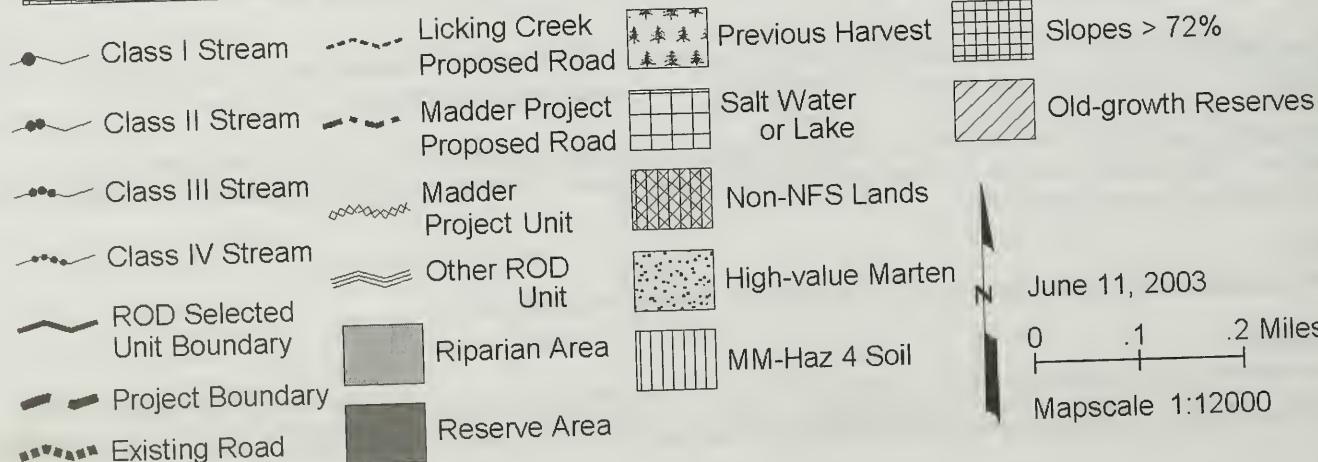
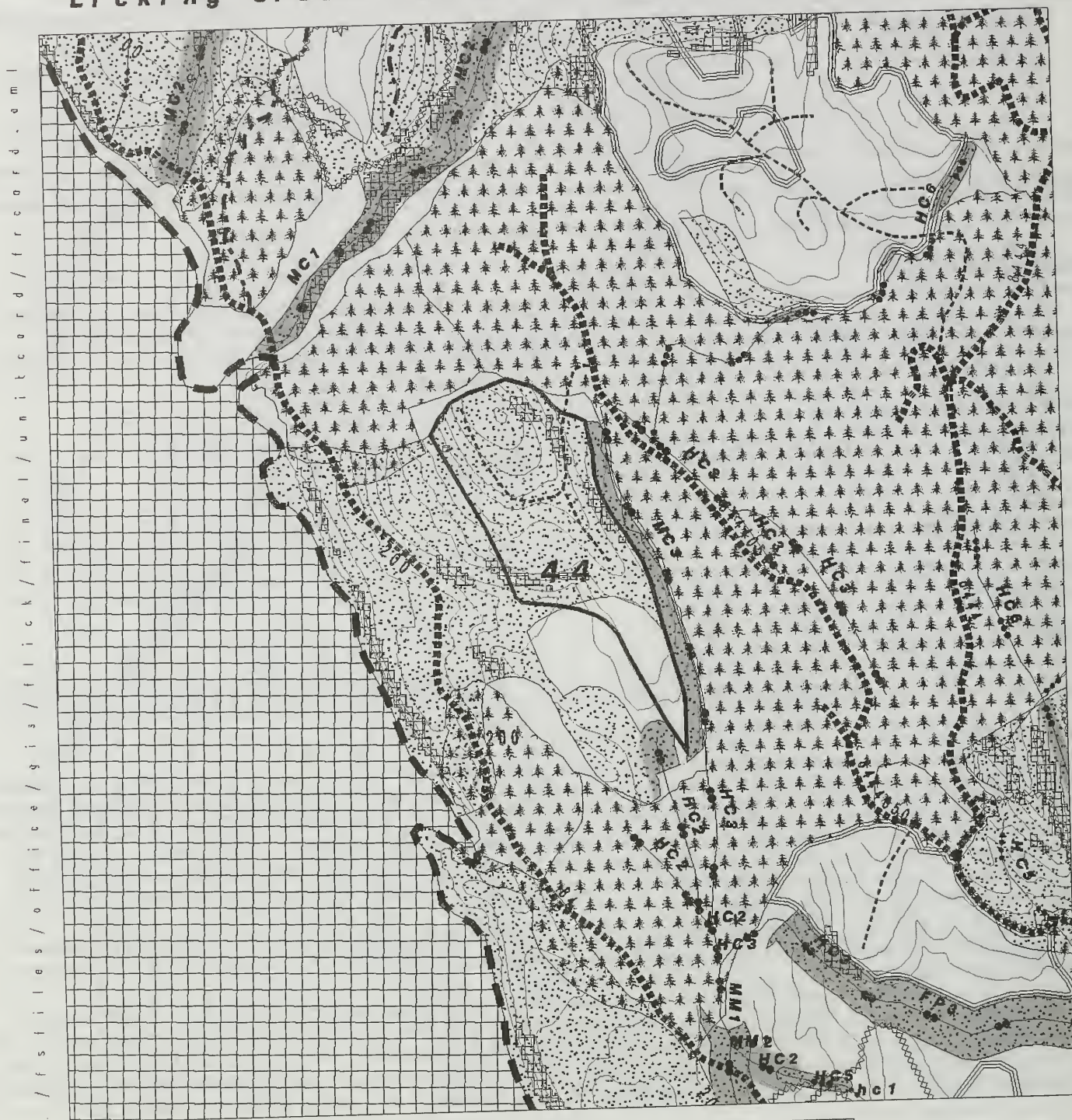
TIMBER:

This unit is designed for a combination of shovel, short and long-span cable yarding.

WILDLIFE:

Marten Standards and Guidelines apply: leave 10-20% of original stand structure, in areas of high-value marten habitat, averaging four large trees/acre (20-30" dbh), three snags/acre, and three large, downed trees/acre (20-30" dbh).

Licking Creek Record of Decision Unit: 44



Unit Data Card – Licking Creek Timber Sale Record of Decision

Unit Number:	44	Planned Unit Acres:	33	Silvicultural Prescription:	EACCR		
LUD:	ML	Primary WAA Number:	406	Quad:	KTNC4SW	VCU Number:	74604
		Logging Systems:	Cable and Shovel	Total Estimated Harvest Volume (CCF):		1,442	

HERITAGE RESOURCES:

No resource concerns were identified. If found, avoid rock shelters and walk in caves. H1, H2

ENGINEERING/ROADS:

No resource concerns were identified. See road cards in Appendix 2. Road 8444051 is new construction and accesses entire unit. The road begins at the terminus of Road 8444050. Construction is moderate to easy. If steep sideslopes greater than 67% are found, excavation will be endhailed.

FISH/WATERSHED:

Class II MC3/HC3 East: Greater of 100-foot or RMA (top of V-notch) buffer is required. F1, F2

Class II HC2 Southwest: Greater of 100-foot or RMA (top of V-notch) buffer is required. F1, F2

GEOLOGY:

No resource concerns were identified.

LANDS:

No resource concerns were identified.

RECREATION/SCENERY:

Unit in foreground seen area of Modified Landscape LUD. Visual Quality Objective is Partial Retention. Unit sits on top of knob and along ridgetop. Top of knob and ridge may be slightly visible in places. Landings at end of Road 8444051 may be visible. Avoid concentration of logging slash in one spot along this end of the road. There are no other unit design concerns. V10

SILVICULTURE:

Vegetation: Stand covers a knob in the north and stretches south along a finger ridge. The east border follows along a stream draw. On the other side of the stream draw is a managed stand that was harvested in 1974. The west boundary lies along a muskeg system. The northwest boundary is adjacent to a managed stand that was harvested in 1962. The east side of the finger ridge is a moderately high-volume western hemlock forest. It transitions to a western hemlock-western red cedar forest type to the west and a mixed conifer forest type in the south 1/3 of the stand. Stand development stage is old growth. Windthrow potential is low. Mistletoe infections were present throughout entire unit in minor severity.

Stand Management Objective: Stand will be predominantly even-aged with windfirm reserve clumps and scattered trees where possible. Natural regeneration is expected to be abundant. Future treatments may include pre-commercial thinning at age 15-25 to promote tree growth and species diversity.

Treatment: Treatment is clearcut with reserves. Leave 10-20% of the stand structure, scattered and/or clumped, in the areas of the unit that contain high-value marten habitat, ensuring that enough large trees (4 per acre >20" dbh) and snags (3 per acre > 20" dbh) are retained to meet the requirements for the standards and guidelines. Areas that are to be excluded from harvest to address soils concerns may count as reserve areas in meeting marten standards and guidelines. Reserve areas may be clumped to obtain windfirmness. Where possible, retain unmerchantable trees throughout the unit, particularly snags and near snags of large diameter. Avoid leaving isolated strips of timber between the borders of managed stands.

SOILS:

Slopes greater than 72%: The results of an on-site stability investigation determined that unit contains small inclusions of slopes greater than 72% associated with the knob in the northern end of the unit. Most of the slopes greater than 72% in the northeast section of the unit will be placed in reserve. In the northwestern end of the unit, there is about 1/4 acre of slopes of 90%. Partial suspension is required in this area to protect McGilvery soils (BMPs 13.2 and 13.9).

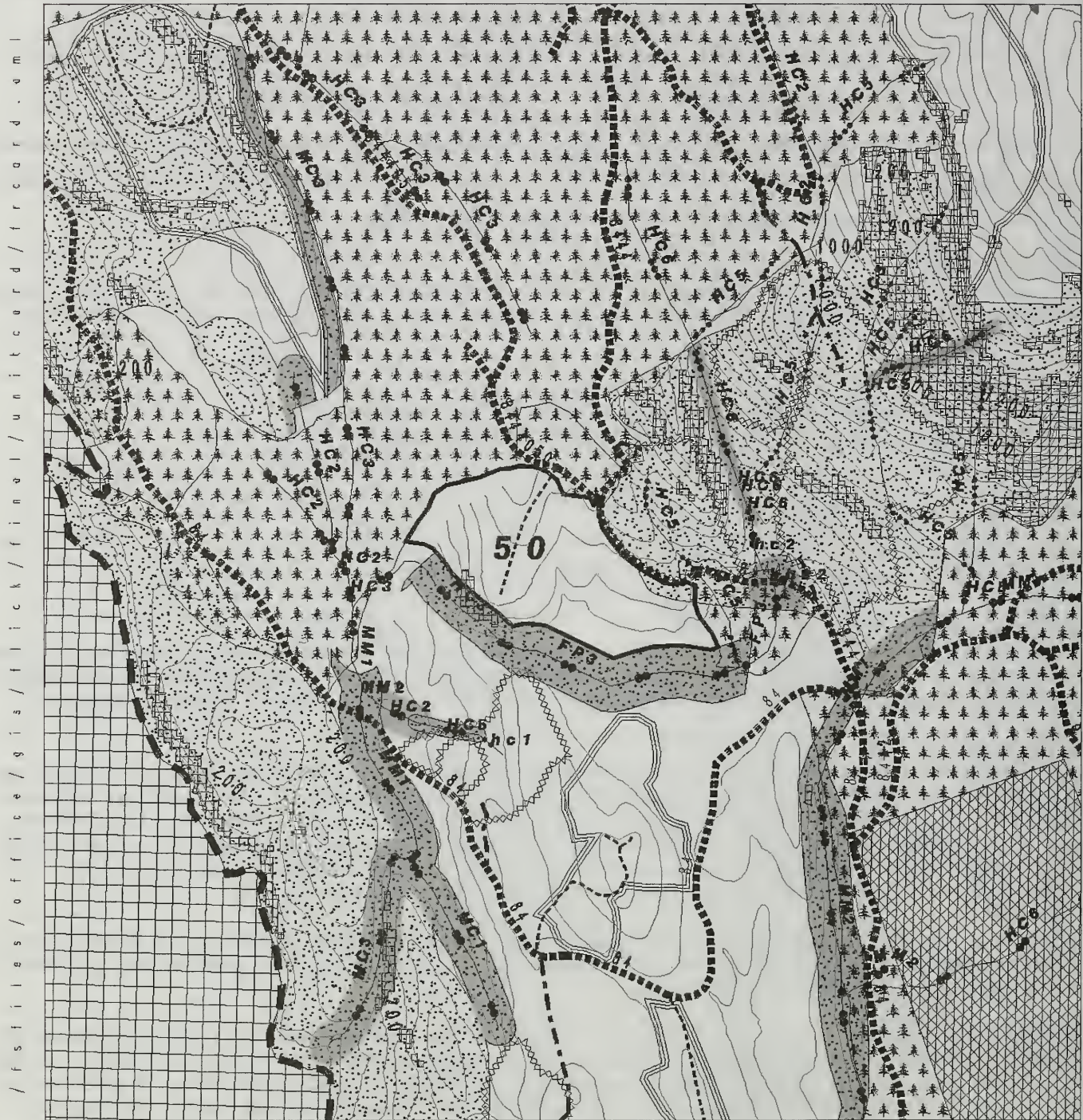
TIMBER:

This unit is designed for a combination of shovel and cable yarding.

WILDLIFE:

Marten Standards and Guidelines apply: leave 10-20% of original stand structure, in areas of high-value marten habitat, averaging four large trees/acre (20-30" dbh), three snags/acre, and three large, downed trees/acre (20-30" dbh).

Licking Creek Record of Decision Unit: 50



Unit Data Card – Licking Creek Timber Sale Record of Decision

Unit Number:	50	Planned Unit Acres:	28	Silvicultural Prescription:	CC		
LUD:	ML, TM	Primary WAA Number:	406	Quad:	KTNC4SW	VCU Number:	74604
		Logging Systems:	Cable and Shovel	Total Estimated Harvest Volume (CCF):			1,252

HERITAGE RESOURCES:

No resource concerns were identified. If found, avoid rock shelters and walk in caves. H1, H2

ENGINEERING/ROADS:

No resource concerns were identified. No new classified road construction is needed to access this unit; however a short, temporary spur road could be constructed.

FISH/WATERSHED:

Class IV HC5 East: Split yarding or partial suspension is required (BMP 13.16 and CT6.51c). F3, F4

Class II FP3 South: Greater of 130-foot or floodplain RMA buffer is required. F1, F2

Class II HC3 West: Greater of 100-foot or RMA (top of V-notch) buffer is required. F1, F2

GEOLOGY:

No resource concerns were identified.

LANDS:

No resource concerns were identified.

RECREATION/SCENERY:

Unit is visible along with Units 40 and 43 and uncut Madder units. However, unit will contribute to meeting Modification Visual Quality Objective as past harvest regenerates.

SILVICULTURE:

Vegetation: Stand has rolling, irregular topography. Overstory is dominated by western hemlock with some Sitka spruce and western red cedar. Understory is dominated by devil's club and blueberry. Windthrow potential is moderate throughout. Mistletoe infection is present throughout the entire stand in minor to moderate infections. The stand is bordered along the northwest by managed stands harvested in 1974. Along the northeast boundary is a Madder timber sale unit that has not yet been harvested.

Stand Management Objective: Stand will be even-aged. Natural regeneration is expected to be abundant. Future treatments may include pre-commercial thinning at age 15-25 to promote tree growth and species diversity.

Treatment: Apply a clearcut prescription. This will reduce mistletoe and remove highly defected trees, maximize economic return, and minimize risk of windthrow. If possible, retain unmerchantable trees throughout the unit, particularly snags and near snags of large diameter. Avoid leaving isolated strips of timber between the borders of managed stands.

SOILS:

Slopes greater than 72%: No slopes greater than 72% were found. If slopes greater than 72% are found, place in reserve or delete from unit.

TIMBER:

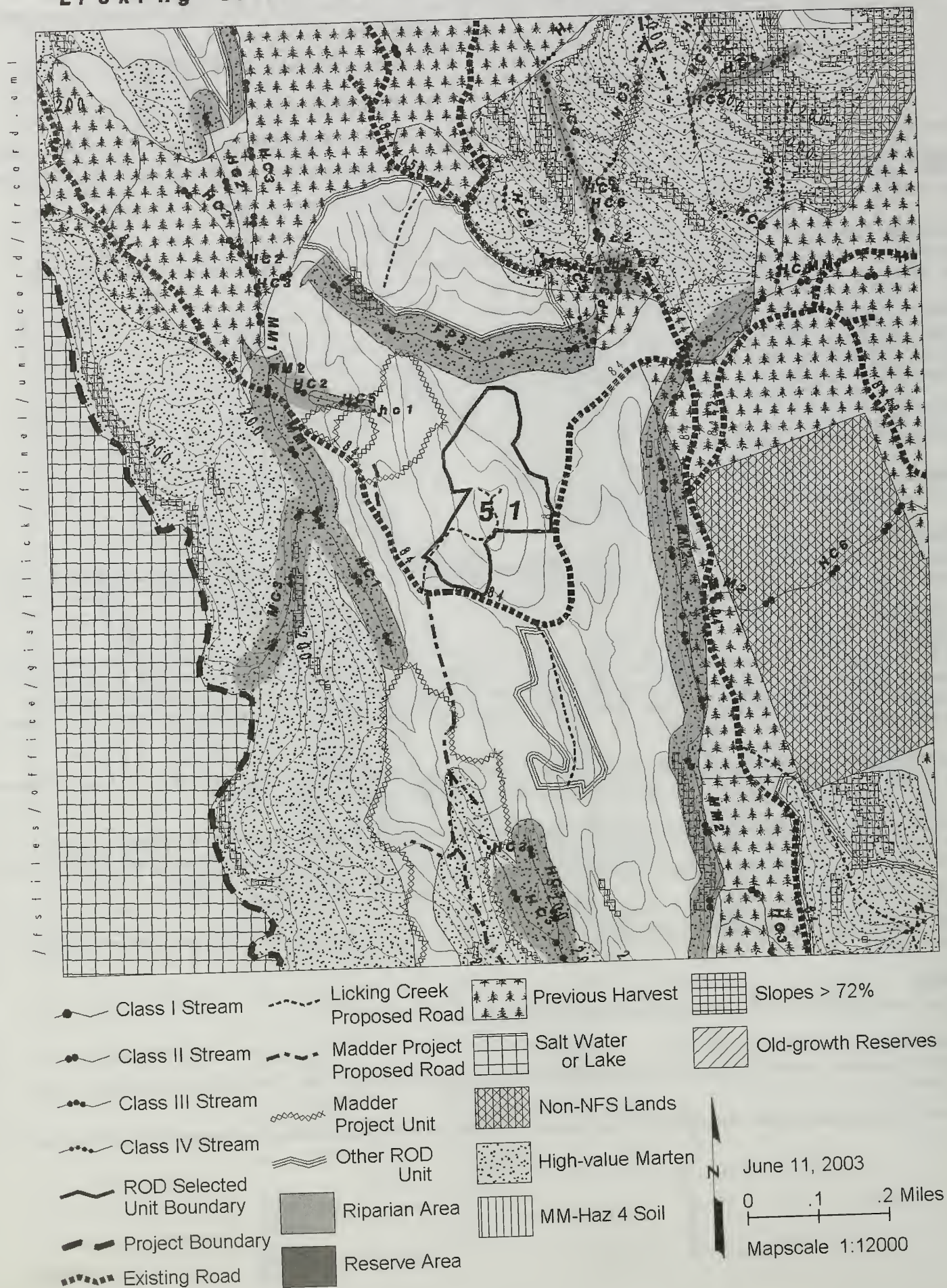
This unit is designed for a combination of shovel and short-span cable.

WILDLIFE:

There are less than 2 acres of high-value marten habitat within the unit; therefore, Marten Standards and Guidelines do not apply in this unit.

Appendix 1

Licking Creek Record of Decision Unit: 51



Unit Data Card – Licking Creek Timber Sale Record of Decision

Unit Number:	51	Planned Unit Acres:	17	Silvicultural Prescription:	CC		
LUD:	ML, TM	Primary WAA Number:	406	Quad:	KTNC4SW	VCU Number:	74604
		Logging Systems:	Cable	Total Estimated Harvest Volume (CCF):			616

HERITAGE RESOURCES:

No resource concerns were identified. If found, avoid rock shelters and walk in caves. H1, H2

ENGINEERING/ROADS:

No resource concerns were identified. No new classified road construction is needed to access this unit; however, a short temporary spur road could be constructed.

FISH/WATERSHED:

No resource concerns were identified.

GEOLOGY:

No resource concerns were identified.

LANDS:

No resource concerns were identified.

RECREATION/SCENERY:

No resource concerns were identified.

SILVICULTURE:

Vegetation: Stand is low lying, has gentle slopes, open canopy, and is bordered by several muskegs. Forest type varies from mixed conifer plant association to western hemlock-western red cedar/ blueberry. Windthrow potential is low to moderate. Cedar decline and mistletoe are present throughout the stand and vary in severity from minor to severe. Stand defect is high, especially in the western red cedar.

Stand Management Objective: Stand will be even-aged. Natural regeneration is expected to be abundant but should be monitored after harvest due to the lower site productivity. Future treatments may include pre-commercial thinning at age 15-25 to promote tree growth and species diversity.

Treatment: Apply a clearcut prescription. This will reduce mistletoe and remove highly defected trees, maximize economic return, and minimize risk of windthrow. If possible, retain unmerchantable trees throughout the unit, particularly snags and near snags of large diameter. Avoid leaving isolated strips of timber along the edges of bordering muskegs. Consider planting Alaska yellow cedar if, at 3 years following harvest, it appears that Alaska yellow cedar is not adequately regenerating.

SOILS:

No resource concerns were identified.

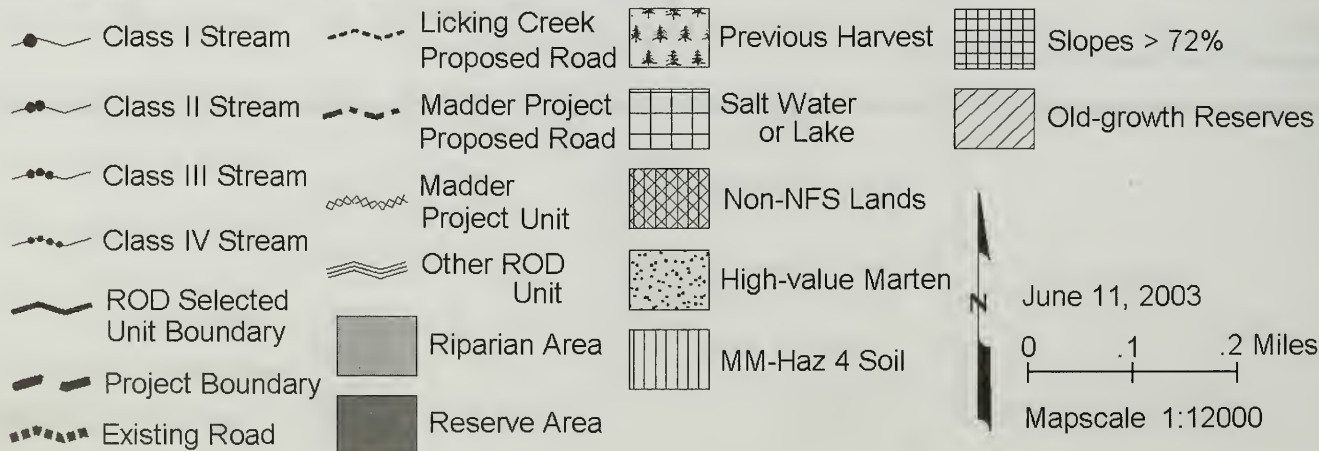
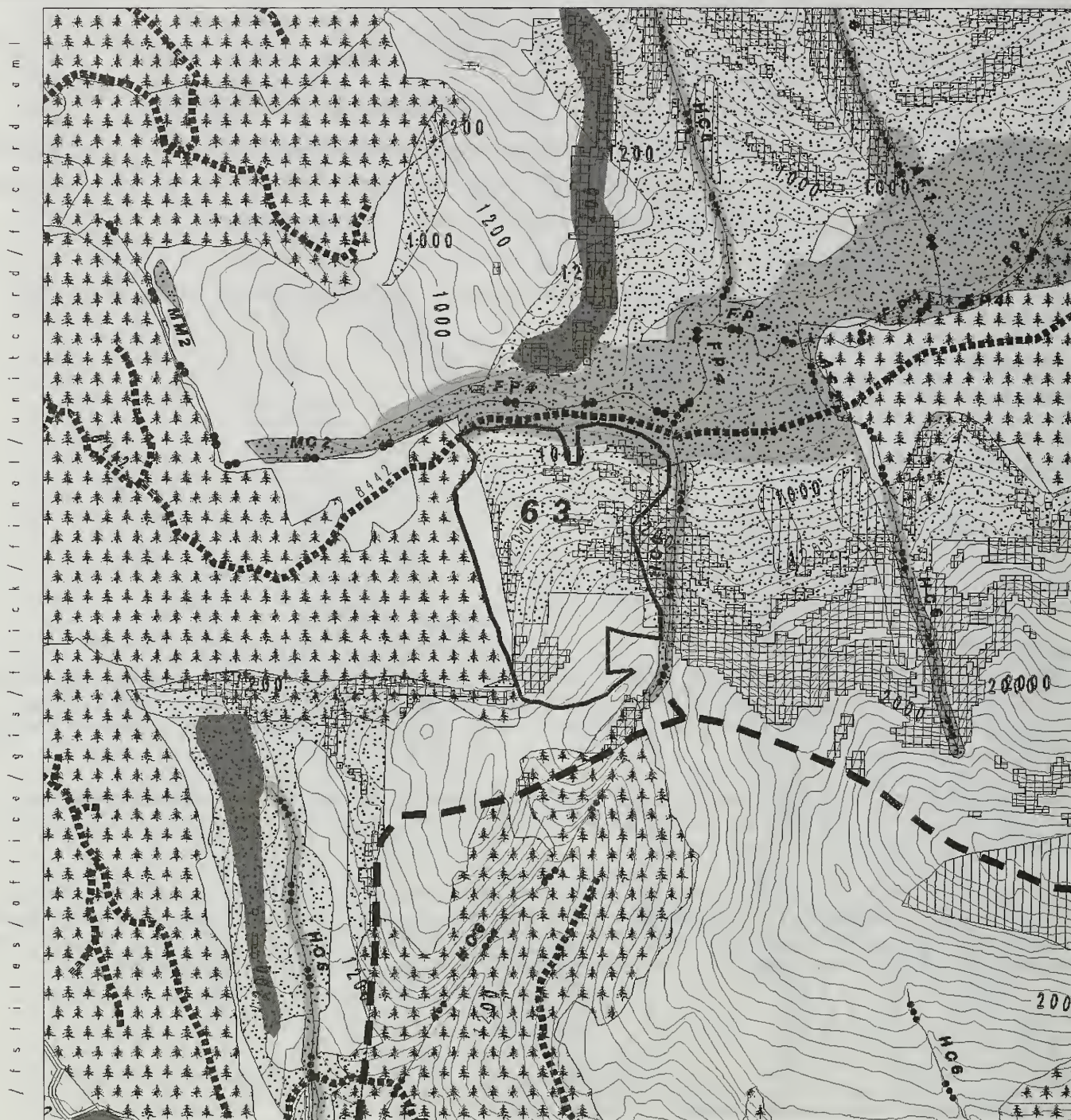
TIMBER:

This unit is designed for short-span cable yarding.

WILDLIFE:

No resource concerns were identified.

Licking Creek Record of Decision Unit: 63



Unit Data Card – Licking Creek Timber Sale Record of Decision

Unit Number:	63	Planned Unit Acres:	39	Silvicultural Prescription:	EACCR		
LUD:	TM	Primary WAA Number:	406	Quad:	KTNC4SW	VCU Number:	74605
		Logging Systems:	Helicopter	Total Estimated Harvest Volume (CCF):			1,708

HERITAGE RESOURCES:

No resource concerns were identified. If found, avoid rock shelters and walk in caves. H1, H2

ENGINEERING/ROADS:

Logs will be helicopter yarded to Road 8442000. See attached road card in Appendix 2. No new roads will be constructed to harvest this unit.

FISH/WATERSHED:

Class II FP4 North: Greater of 130-foot or floodplain RMA buffer is required. F1, F2

Class III HC6 East: Sideslope Standard and Guideline or RMA (top of V-notch) buffer is required. F1, F2

GEOLOGY:

No resource concerns were identified.

LANDS:

No resource concerns were identified.

RECREATION/SCENERY:

Unit is located on a north-facing slope adjacent to Marble Creek, about 3 miles upstream from saltwater. It is partially visible from some viewpoints in Carroll Inlet between the mouths of Marble Creek and Calamity Creek. It is in the middleground seen area of a Timber Production LUD. The Visual Quality Objective is Maximum Modification. There are no concerns with location or design of unit. V1

SILVICULTURE:

Vegetation: Stand is varied, with western hemlock, yellow-cedar, Sitka spruce, and mountain hemlock in the overstory. The aspect is north/northwest and as a result, the stand displays low windthrow potential and gap phase disturbance dynamics. It is bordered to the west by a managed stand, harvested in 1974. Marble Creek and an old road border the stand on the north. No yellow cedar decline was present and mistletoe infections were found in only one area and were minor in severity. Stem decay and stem defects were moderate overall but found in nearly all western and mountain hemlock.

Stand Management Objective: Stand will be predominantly even-aged with windfirm reserve clumps and scattered trees where possible. Natural regeneration is expected to be abundant. Future treatments may include pre-commercial thinning at age 15-25 to promote tree growth and species diversity.

Treatment: Treatment is clearcut with reserves. Leave 10-20% of the stand structure, scattered and/or clumped, in the areas of the unit that contain high-value marten habitat, ensuring that enough large trees (4 per acre >20" dbh) and snags (3 per acre > 20" dbh) are retained to meet the requirements for the standards and guidelines. Reserve areas may be clumped to obtain windfirmness. Where possible, retain all unmerchantable trees throughout the unit, particularly snags and near snags of large diameter. Avoid leaving isolated strips of timber between the borders of managed stands.

SOILS:

Slopes greater than 72%: No slopes greater than 72% will be harvested.

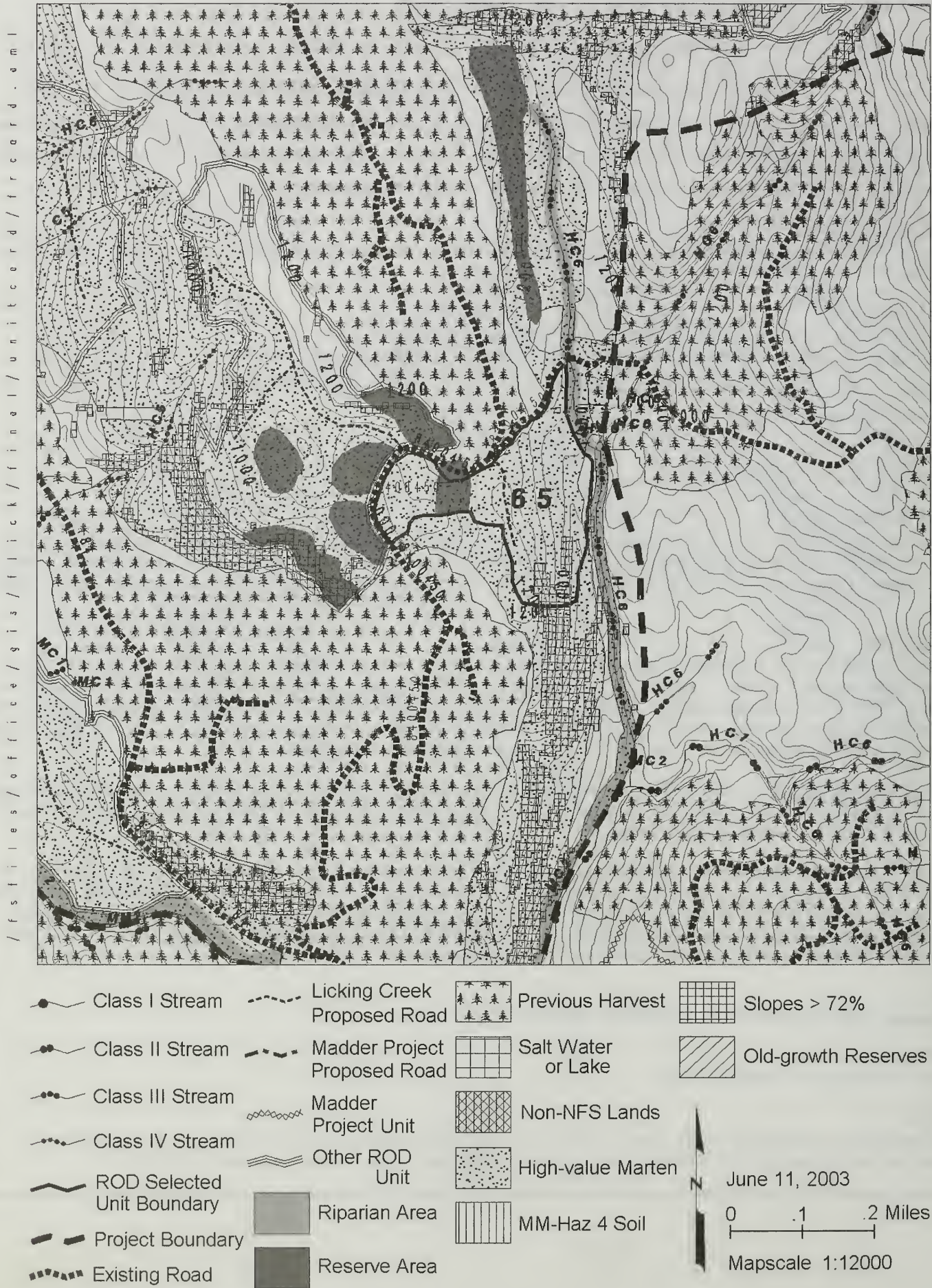
TIMBER:

This unit is designed for helicopter yarding.

WILDLIFE:

Marten Standards and Guidelines apply: leave 10-20% of original stand structure, in areas of high-value marten habitat, averaging four large trees/acre (20-30" dbh), three snags/acre, and three large, downed trees/acre (20-30" dbh).

Licking Creek Record of Decision Unit: 65



Unit Data Card – Licking Creek Timber Sale Record of Decision

Unit Number:	65	Planned Unit Acres:	26	Silvicultural Prescription:	EACCR		
LUD:	TM	Primary WAA Number:	406	Quad:	KTNB4NW	VCU Number:	74605
		Logging Systems:	Cable and Shovel	Total Estimated Harvest Volume (CCF):			1,148

HERITAGE RESOURCES:

No resource concerns were identified. If found, avoid rock shelters and walk in caves. H1, H2

ENGINEERING/ROADS:

No resource concerns were identified. No new road construction is needed to harvest this unit. Unit can be harvested from existing Road 8400450. See road card in Appendix 2.

FISH/WATERSHED:

Class III HC6 East: Sideslope Standard and Guideline or RMA (Top of V-notch) buffer is required. F1, F2.

GEOLOGY:

The karst resources within the unit have a moderate vulnerability. Reserve area has been placed around intermittent stream course and riparian area, as the stream issues from a resurgence. Partial suspension is required throughout the unit (BMPs 13.5 and 13.9).

LANDS:

No resource concerns were identified.

RECREATION/SCENERY:

No resource concerns were identified.

SILVICULTURE:

Vegetation: This unit borders Licking Creek Unit 71. Its central northwest boundary borders a second-growth area harvested in 1988. There is a rockpit located on the north-central boundary. An extensive second-growth stand, harvested in 1972, lies to the southwest of the unit. Overstory is dominated by multi-sized western hemlock and scattered Sitka spruce. Stand development stage is old growth with areas of blowdown and understory reinitiation occurring in the western half of the unit. Elsewhere, windthrow potential is low. Mistletoe is present in minor severity in areas of the unit.

Stand Management Objective: Stand will be predominantly even-aged with windfirm reserve clumps and scattered trees where possible. Natural regeneration is expected to be abundant. Future treatments may include pre-commercial thinning at age 15-25 to promote tree growth and species diversity.

Treatment: Treatment is clearcut with reserves. Leave 10-20% of the stand structure, scattered and/or clumped, throughout the unit which consists of all high-value marten habitat, ensuring that enough large trees (4 per acre >20" dbh) and snags (3 per acre > 20" dbh) are retained to meet the requirements for the standards and guidelines. Reserve areas may be clumped to obtain windfirmness. Where possible, retain all unmerchantable trees throughout the unit, particularly snags and near snags of large diameter. Avoid leaving isolated strips of timber between the borders of managed stands.

SOILS:

Slopes greater than 72%: The results of an on-site stability investigation determined that about 1/2 acre of 90% slopes are present in the southern end of the unit. Partial suspension is required in this area to protect potentially unstable soils (BMPs 13.2 and 13.9)

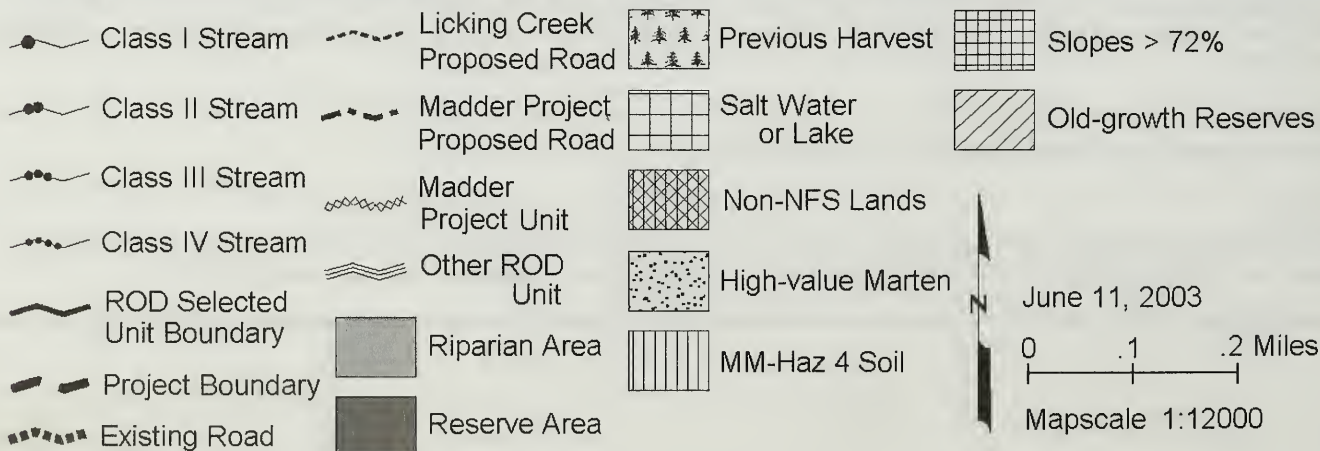
TIMBER:

This unit is designed for short-span cable and shovel yarding.

WILDLIFE:

Marten Standards and Guidelines apply: leave 10-20% of original stand structure, in areas of high-value marten habitat, averaging four large trees/acre (20-30" dbh), three snags/acre, and three large, downed trees/acre (20-30" dbh).

Licking Creek Record of Decision Unit: 67



Unit Data Card – Licking Creek Timber Sale Record of Decision

Unit Number:	67	Planned Unit Acres:	55	Silvicultural Prescription:	EACCR		
LUD:	TM	Primary WAA Number:	406	Quad:	KTNC4SW	VCU Number:	74605
		Logging Systems:	Cable	Total Estimated Harvest Volume (CCF):		2,388	

HERITAGE RESOURCES:

No resource concerns were identified. If found, avoid rock shelters and walk in caves. H1, H2

ENGINEERING/ROADS:

No resource concerns were identified. Road 8400470 accesses unit. Road 8400470 begins at an intersection with Road 8400000. See road card in Appendix 2. The road is easy to moderate construction. If sideslopes greater than 67% are found, then excavation will be endhailed. Road is located to avoid rockface and cross drainages at most desirable location.

FISH/WATERSHED:

Class IV HC5 North: Fall trees away from streamcourse; split yarding or partial suspension is required (BMP 13.6 and CT6.5c). F3, F4

Class III HC3 Center West: Sideslope Standard and Guideline RMA (top of V-notch) buffer is required. F1, F2

Class IV HC5 South: Fall trees away from streamcourse; split yarding or partial suspension is required (BMP 13.6 and CT6.5c). F3, F4

GEOLOGY:

The karst resources within the unit have a moderate vulnerability. Partial suspension is required throughout the unit (BMPs 13.5 and 13.9). This unit is underlain by dolomitic marble. Streams in the unit run across the surface of the bedrock.

LANDS:

No resource concerns were identified. Northern boundary of unit is adjacent to U.S. Coast Guard property.

RECREATION/SCENERY:

Unit sits on moderate to steep near-middleground slopes directly facing Carroll Inlet. The unit is in a Timber Production LUD. Therefore, the Visual Quality Objective is Maximum Modification. This unit is seen in conjunction with Unit 71 which is just to the south of and above Unit 67. Unit 67 needs to be broken up with a significant block of forested texture being retained, possibly on either side of the stream that runs through the middle of the unit. Also retain some clumps of leave trees in upper part of unit to reduce impact of backline. V1, V4

SILVICULTURE:

Vegetation: This is a multi-storied, old-growth western hemlock stand as a result of small-scale wind disturbance (gap phase dynamics). Mistletoe infections are present in minor severity throughout the stand. Understory is dominated by swordfern and devil's club. It is bordered to the west by an extensive second-growth stand harvested in 1972.

Stand Management Objective: Stand will be predominantly even-aged with windfirm reserve clumps and scattered trees where possible. Natural regeneration through release of established stems is expected to be abundant. Future treatments may include pre-commercial thinning at age 15-25 to promote tree growth and species diversity.

Treatment: Treatment is clearcut with reserves. Leave 10-20% of the stand structure, scattered and/or clumped, throughout the unit which consists of all high-value marten habitat, ensuring that enough large trees (4 per acre >20" dbh) and snags (3 per acre > 20" dbh) are retained to meet the requirements for the standards and guidelines. Reserve areas may be clumped to obtain windfirmness. Areas that are to be excluded from harvest to address soils and/or visual concerns may count as reserve areas in meeting marten standards and guidelines. Where possible, retain unmerchantable trees throughout the unit, particularly snags and near snags of large diameter.

SOILS:

Slopes greater than 72%: There are about 2 1/2 acres of slopes greater than 72% in the unit, most of which are in the western edge of the unit and will be placed in reserve for visual concerns. The remaining 1/2 acre not in reserve consists of small rock outcrops and unsustained slopes which showed no evidence of slumping or mass movement. Therefore, no specific harvest guidelines are recommended.

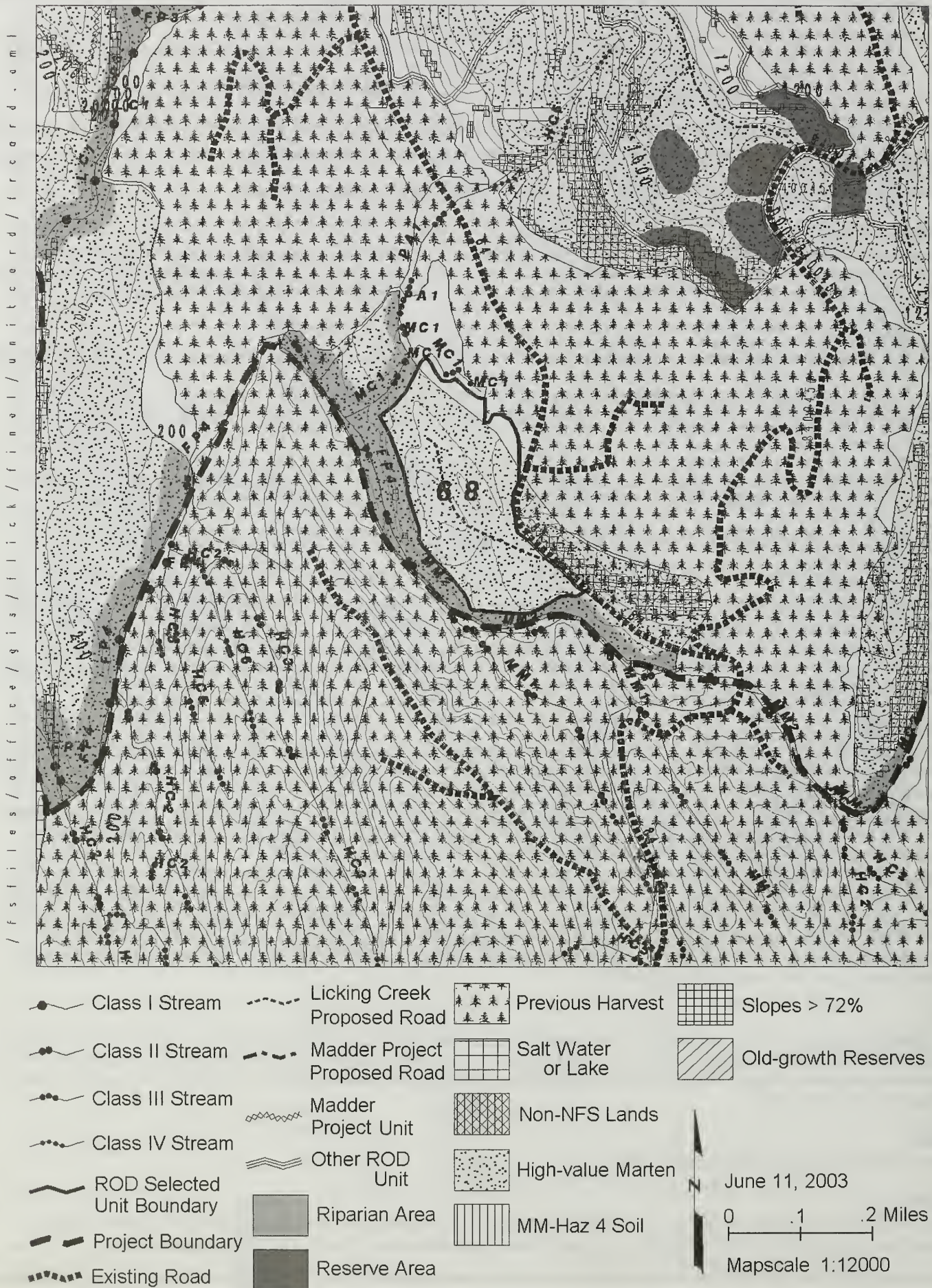
TIMBER:

This unit is designed for short-span cable yarding.

WILDLIFE:

Marten Standards and Guidelines apply: leave 10-20% of original stand structure, in areas of high-value marten habitat, averaging four large trees/acre (20-30" dbh), three snags/acre, and three large, downed trees/acre (20-30" dbh).

Licking Creek Record of Decision Unit: 68



Unit Data Card – Licking Creek Timber Sale Record of Decision

Unit Number:	68	Planned Unit Acres:	30	Silvicultural Prescription:	EACCR	
LUD:	TM	Primary WAA Number:	406	Quad:	KTNB4NW	VCU Number: 74605
		Logging Systems:	Cable and Shovel	Total Estimated Harvest Volume (CCF):		1,291

HERITAGE RESOURCES:

No resource concerns were identified. If found, avoid rock shelters and walk in caves. H1, H2

ENGINEERING/ROADS:

No resource concerns were identified. Unit is accessed by Road 8400445. See road card in Appendix 2. Road construction is moderate to easy over length of road. Road location crosses no areas of steep sideslopes.

FISH/WATERSHED:

Class III MC1 Northeast: Sideslope Standard & Guideline RMA (top of V-notch) buffer is required. F1, F2

Class II MC1 Northwest: Greater of 100-foot or RMA (top of V-notch) buffer is required. F1, F2

Class II MM2 South and West: Greater of 120-foot or RMA (top of sideslope) buffer is required. F1, F2

Class II FP4 Northwest: Greater of 130-foot or floodplain buffer is required. F1, F2

GEOLOGY:

No resource concerns were identified.

LANDS:

No resource concerns were identified.

RECREATION/SCENERY:

No resource concerns were identified.

SILVICULTURE:

Vegetation: This stand is an island of old growth surrounded on all sides by second growth. Harvest in the surrounding areas occurred in 1972-1973. The remaining forest that comprises Unit 68 has been influenced by wind. Windthrow has been widespread throughout the unit, resulting in an understory reinitiation stand structure. It is a productive site, dominated by western hemlock and scattered Sitka spruce. Understory vegetation is sparse in areas but is dominated by blueberry, devil's club and skunk cabbage.

Stand Management Objective: Stand will be predominantly even-aged with windfirm reserve clumps and scattered trees where possible. Natural regeneration is expected to be abundant. Future treatments may include pre-commercial thinning at age 15-25 to promote tree growth and species diversity.

Treatment: Treatment is clearcut with reserves. Leave 10-20% of the stand structure, scattered and/or clumped, throughout the unit which consists of all high-value marten habitat, ensuring that enough large trees (4 per acre >20" dbh) and snags (3 per acre > 20" dbh) are retained to meet the requirements for the standards and guidelines. Reserve areas may be clumped to obtain windfirmness. Where possible, retain unmerchantable trees throughout the unit, particularly snags and near snags of large diameter. Avoid leaving isolated strips of timber between the borders of the surrounding managed stands.

SOILS:

No resource concerns were identified.

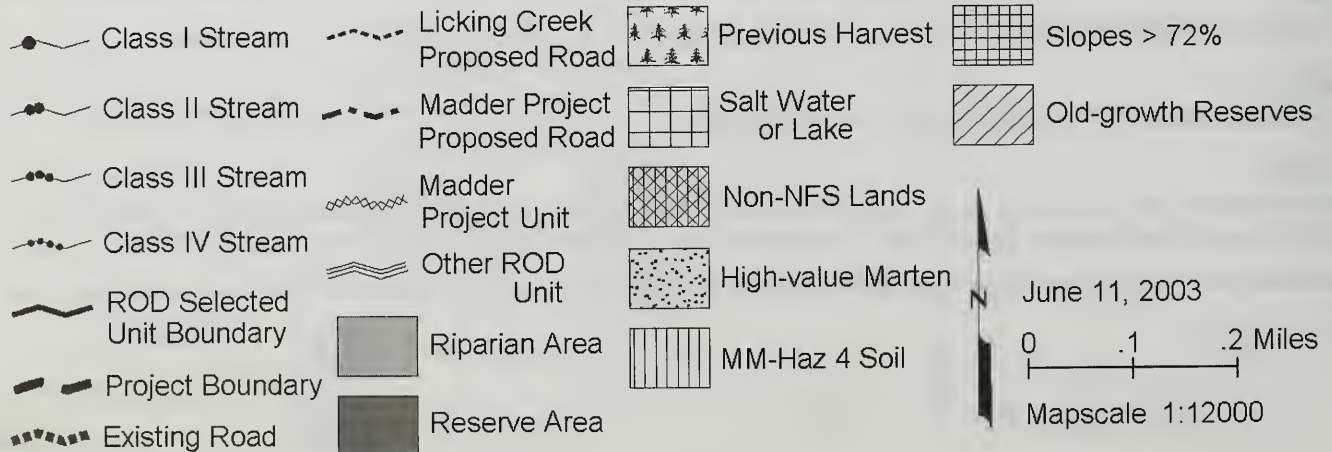
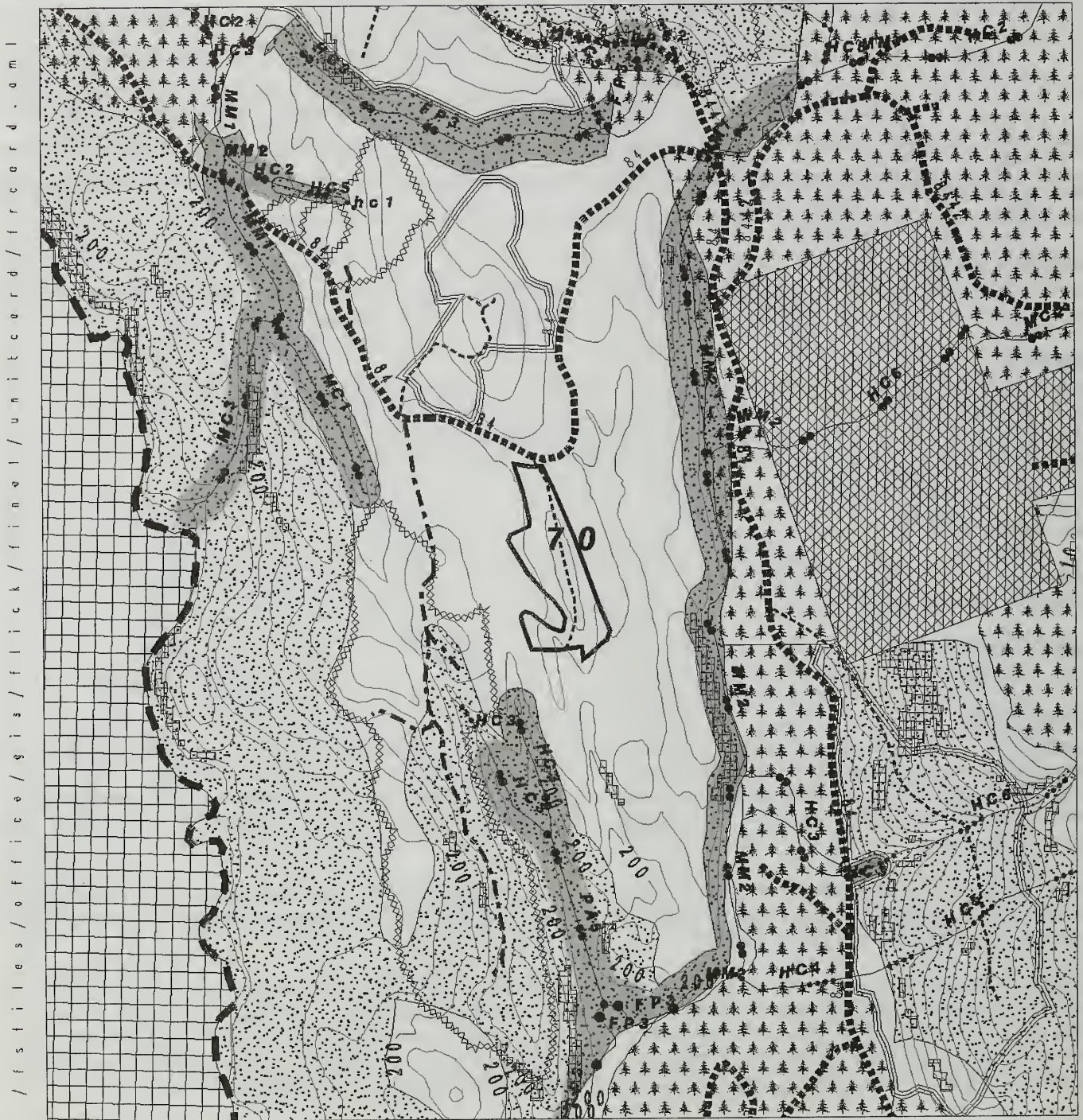
TIMBER:

This unit is designed for shovel and short-span cable yarding.

WILDLIFE:

Marten Standards and Guidelines apply: leave 10-20% of original stand structure, in areas of high-value marten habitat, averaging four large trees/acre (20-30" dbh), three snags/acre, and three large, downed trees/acre (20-30"dbh).

Licking Creek Record of Decision Unit: 70



Unit Data Card – Licking Creek Timber Sale Record of Decision

Unit Number:	70	Planned Unit Acres:	9	Silvicultural Prescription:	CC		
LUD:	TM, ML	Primary WAA Number:	406	Quads:	KTNC4SW KTNB4NW	VCU Number:	74604
		Logging Systems:	Cable	Total Estimated Harvest Volume (CCF):			303

HERITAGE RESOURCES:

No resource concerns were identified. If found, avoid rock shelters and walk in caves. H1, H2

ENGINEERING/ROADS:

No resource concerns were identified. No new road construction is needed to harvest this unit.

FISH/WATERSHED:

No resource concerns were identified.

GEOLOGY:

No resource concerns were identified.

LANDS:

No resource concerns were identified.

RECREATION/SCENERY:

No resource concerns were identified.

SILVICULTURE:

Vegetation: Unit lies along a low ridge that bisects a large muskeg system. Forest type is dominated by mixed conifer plant association in the northern half that transitions to western hemlock-western red cedar plant association in the southern portion of the stand. There is high defect in many of the western red cedar trees. Yellow cedar decline is present throughout and is severe in the north 1/2 of unit. Windthrow potential is low.

Stand Management Objective: Stand will be even-aged. Natural regeneration is expected to be abundant. Future treatments may include pre-commercial thinning at age 15-25 to promote tree growth and species diversity.

Treatment: Apply even-aged clearcut. This prescription will reduce stand disease, remove highly defected stems, maximize economic return and will minimize the risk of windthrow. Avoid isolating strips of timber along the muskeg edges. Consider planting Alaska yellow cedar if, at 3 years following harvest, it appears that Alaska yellow cedar is not adequately regenerating.

SOILS:

No resource concerns were identified.

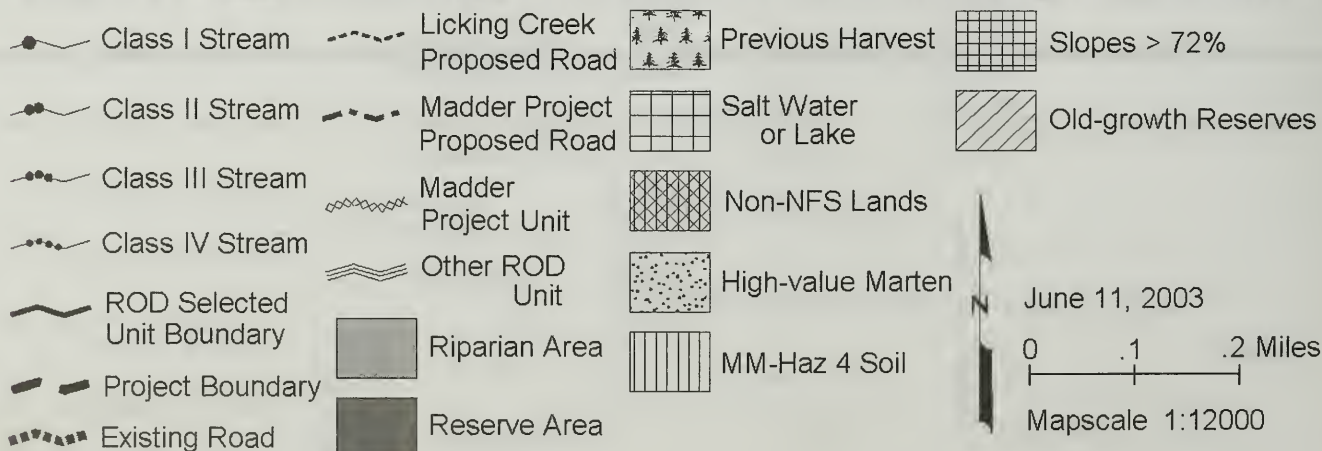
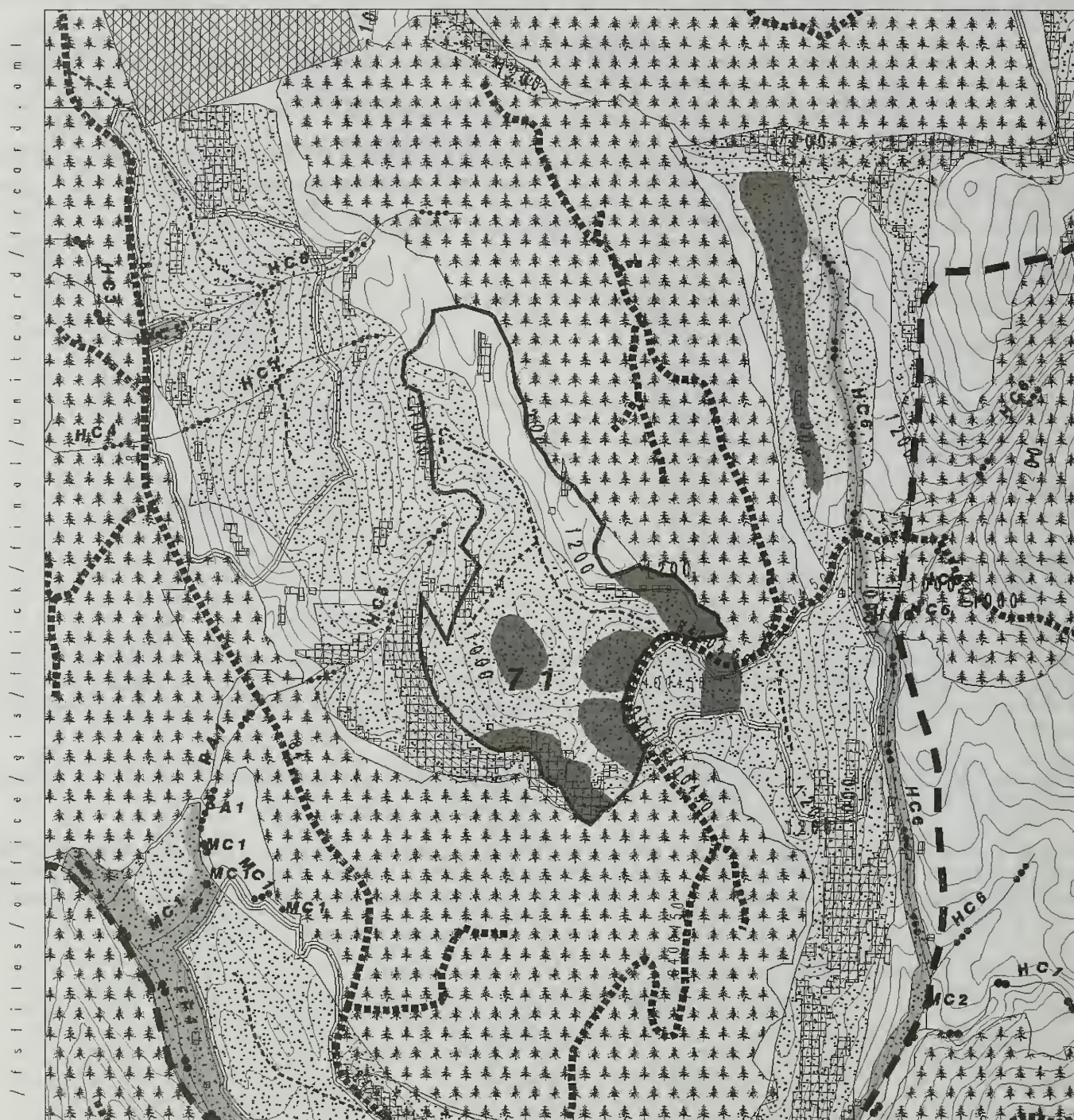
TIMBER:

This unit is designed for short-span cable.

WILDLIFE:

No resource concerns were identified.

Licking Creek Record of Decision Unit: 71



Unit Data Card – Licking Creek Timber Sale Record of Decision

Unit Number:	71	Planned Unit Acres:	64	Silvicultural Prescription:	EACCR		
LUD:	TM	Primary WAA Number:	406	Quad:	KTNC4SW	VCU Number:	74605
		Logging Systems:	Shovel and Cable	Total Estimated Harvest Volume (CCF):			2,807

HERITAGE RESOURCES:

No resource concerns were identified. If found, avoid rock shelters and walk in caves. H1, H2

ENGINEERING/ROADS:

The road location for Road 8400451 begins at an intersection with Road 8400450 and is located to avoid steep cliffs and significant karst features. Road grades are under 10% and sideslopes greater than 30% are found only at the terminus of the road. Temporary roads are needed to access portions of the unit. See road cards in Appendix 2.

FISH/WATERSHED:

Class IV HC5 West: Fall trees away from streamcourse; split yarding or partial suspension is required (BMP 13.6 and CT6.51c). F3, F4

GEOLOGY:

There are significant karst features of high vulnerability in this unit, which include a sink field associated with a fracture and resurgences. A minimum 100-foot, no-harvest buffer will be maintained surrounding these features, and the access road through this unit will be aligned during layout to protect these features. The vulnerability of the karst systems in the remainder of the unit is low to moderate. The soils are thinner towards the top of the knobs on the landscape. To minimize the soil disturbance during yarding, partial suspension is required. (BMPs 13.5 and 13.9).

LANDS:

No resource concerns were identified.

RECREATION/SCENERY:

Only small portions of unit are visible from Carroll Inlet since it sits up on a gently sloping bench. Unit is in middleground seen area in a Timber Production LUD. This unit is seen in conjunction with Unit 67, which will be clearly visible. Visual Quality Objective is Maximum Modification. No resource concerns were identified.

SILVICULTURE:

Vegetation: Stand is an old-growth, multi-sized western hemlock stand. Overstory is dominated by western hemlock with occasional spruce and western red cedar. Topography is irregular throughout the unit with benches, spur ridges and several different aspects. Wind disturbance is moderate throughout the entire unit. It is adjacent to two managed, even-aged stands, harvested in 1972 and 1988.

Stand Management Objective: Stand will be predominantly even-aged with windfirm reserve clumps and scattered trees where possible. Natural regeneration is expected to be abundant. Future treatments may include pre-commercial thinning at age 15-25 to promote tree growth and species diversity.

Treatment: Treatment is clearcut with reserves. Leave 10-20% of the stand structure, scattered and/or clumped, throughout the unit which consists of all high-value marten habitat, ensuring that enough large trees (4 per acre >20" dbh) and snags (3 per acre > 20" dbh) are retained to meet the requirements for the standards and guidelines. Reserve areas may be clumped to obtain windfirmness. Where possible, retain all unmerchantable trees throughout unit, particularly snags and near snags of large diameter. Avoid leaving isolated strips of timber between the borders of managed stands to the northeast and south of proposed unit.

Rare and Sensitive Plants: The rare plant *Listera convallarioides* was found in one location on the boundary of Unit 71. The area has been marked off with flagging to be protected during yarding.

SOILS:

Slopes greater than 72%: The results of an on-site stability investigation determined that there are about 2 1/2 acres of slopes greater than 72% in this unit. Partial suspension is required on slopes greater than 72% to minimize soil disturbance (BMPs 13.2 and 13.9).

TIMBER:

This unit is designed for short-span cable and shovel yarding.

WILDLIFE:

Marten Standards and Guidelines apply: leave 10-20% of original stand structure, in areas of high-value marten habitat, averaging four large trees/acre (20-30" dbh), three snags/acre, and three large, downed trees/acre (20-30" dbh). A marbled murrelet nest was reported in this unit; a 600-foot forested buffer around the nest site will be applied.



Skagit yarder; photo by Dave Fletcher

Appendix 2

Road Cards

Appendix 2

Road Cards

General Mitigation Measures

Individual road cards are created for all classified road segments to be used in the Licking Creek project. Each classified road is numbered. Temporary roads, while displayed on the road card maps, are not numbered and do not have individual road cards.

The general measures described in Introduction to Appendix 1, Unit Cards, apply to all roads in the Licking Creek project. The source(s) of each general measure are listed after the measure in terms of individual Forest-wide Standards and Guidelines (see Chapter 4 of the Forest Plan) or BMPs (see Appendix C of the Forest Plan and Chapter 10 of FSH 2509.22, The Soil and Water Conservation Handbook). Measures with application to a particular road are listed on the individual road cards as Site-specific Design Criteria.

General Design Criteria and Elements are shown on the Road Management Objectives portion of the road cards and are defined as follows:

- Functional Class: Local (L), Collector (C), and Arterial (A) classifications
- Service Life: Long (L) or Short (S), Constant (C) or Intermittent (I), consistent with NEPA disclosure document
- Traffic Service Level: Traffic Service Level anticipated for the design (A, B, C, D) that takes into consideration the characteristics of the road and operating conditions

Operational Maintenance Levels incorporate traffic service levels, as indicated in the following definitions. Applicable maintenance levels for the project area are:

- Maintenance Level 1 (Traffic Service Level D): Roads are closed by barrier, bridge removal or organic encroachment and are monitored for resource protection. Basic custodial maintenance is performed to perpetuate the road and to facilitate future management activities.
- Maintenance Level 2 (Traffic Service Level C): Roads are maintained for high-clearance vehicles and monitored for resource protection. Traffic would be minor, consisting of administrative uses.

AFRPR Status: Alaska Forest Resource Protection Regulations.

The road segments are described using kilometer posts as beginning and ending points. Lengths are given in both kilometers (km) and miles (mi). Road width is given in meters (m).

The stream crossing data found on the narrative portion of the road card comes from field-based road condition surveys. Only a short (roughly 100-foot) segment of the stream upstream and downstream of the road crossings was explored, as opposed to surveying the entire length of the stream. This level of information was not adequate to map the streams and add them to the Geographic Information System data. For this reason, more stream crossings are discussed in the narrative portion of the road card than are shown on the road card maps.

Existing Road depicts roads already built for previous projects. Some of these roads will require reconstruction (**Reconstruct Existing Road**) to be used for the Licking Creek Timber Sale project.

Madder Project Road. These roads were included in the Sea Level Timber Sale Record of Decision, signed in May 1999. The Madder Timber Sale is scheduled to be sold by 2004.

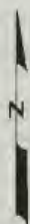
Licking Creek Proposed Road includes both classified and temporary roads to be built for this project. However, the **Selected Road Segment**, for which the road card is created, is always a classified road and has a road number.

Licking Creek Road Card Road 84 (8400000) - Existing



- Class I Stream
- Class II Stream
- Class III Stream
- Class IV Stream
- ++++ ROD Unit Boundary
- Existing Road
- NEPA Cleared Road
- Reconstruct Existing Road
- Project Road

- Selected Road Segment
- Wetland
- MM-Haz 4 Soil
- Potential Slopes GT 65%
- Fresh or Salt Water



Status - Existing
 Contour Interval 200 feet
 Mapscale 1:59902
 June 12, 2003
 0 .2 .4 Miles

Note: Compiled from various digital geographic data.
 This map may not meet National Map accuracy standards.

Road Management Objectives

Project/EIS	System	Land Use Designation	
Licking Creek	Licking Creek	TP	
Route No.		Status	
8400000		Existing	
Begin Kilometer Post	Length [kilometers (miles)]	Begin Termini (Kilometer Post)	End Termini (Kilometer Post)
Licking Creek Project Area begins at KM 53.13	7.94 km (4.93 mi)	53.13	61.07
From Project Area to intersection with Road 8400420 (road to LTF) Kilometer Post 48.45	4.68 km (2.91 mi)	48.45	53.13

General Design Criteria and Elements

Functional Class	Service Life	Traffic Service Level	Surface	Width	Critical Vehicle	Design Vehicle	Design Speed
A	Long Term	C	Rock	4.3 m	Lowboy	Light truck	25 kph

Intended Purpose/Future Use: Uses include silvicultural activities and administrative use.

Maintenance Criteria

Operational Maintenance Level: 2

Objective Maintenance Level: 2

Maintenance Narrative: Road will be maintained to the level that a pickup truck traveling at 25 kph needs. This includes servicing all culverts and drainage structures, ditchlines and brushing.

Operation Criteria

Highway Safety Act: No

Jurisdiction: National Forest System

AFRPR Status: Open

Travel Management Strategies: Existing road serves the Coast Guard station personnel and is used for Forest Service administrative purposes.

Encourage:	NA
Accept:	High-clearance vehicles
Discourage:	NA
Prohibit:	NA
Eliminate	NA

Travel Management Narrative: Maintain road for use by Coast Guard personnel performing their administrative duties, as well as Forest Service personnel. Keep ditchlines, culverts and other drainage structures properly maintained. Brush roads as required.

District Ranger Approval (signature): _____ **Date:** _____

Road Management Objectives

Site-Specific Design Criteria

Road No. 8400000

Road Location: This is an existing road and will require only minimal maintenance prior to use for road management.

Wetlands: Road management on the small portion of Road 8400000 that crosses wetlands and requires road maintenance will not further impact wetlands and will not change the existing footprint.

Erosion Control: An erosion control plan for maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMPs 12.17 and 14.8). During road maintenance activities, Wetlands Protection Measures (BMP 12.5) will be followed. Revegetation of Disturbed Areas (BMP 12.17) and Drainage Control Structures to Minimize Erosion and Sedimentation (BMP 14.9) will be followed. Road Access (BMP 14.20) and Access Management (BMP 14.22) will be implemented.

Rock Pits: Existing rock pits are located for the most economical haul and least impacts to other resources.

Resource Information (If applicable):

Timber/Logging: No resource concerns were identified.

Soils/Water: During pre-haul and post-haul maintenance, all bare cut slope banks will be seeded. Pre-haul maintenance should include mitigation of the following: cut slope erosion at Milepost 27.7 needs to be seeded. Road slumping and settling is occurring in multiple places between Mileposts 24 to 28. At Milepost 28.4, the right shoulder of road is eroding from water running down road. Road is sloughing at Milepost 36. Ditch needs to be cleaned out and reshaped between Mileposts 24.5 and 37.

Silviculture: Keep road open to ensure access to units until they are certified as stocked as required by NFMA and to enable access to potential thinning units in the project area.

Wildlife/Botany: No resource concerns were identified.

Lands/Minerals/Geology/Karst: No resource concerns were identified. No quarry shall be developed on top of karst without adequate site survey and design. Roads shall, to the extent feasible, avoid sinkholes and other collapse features and losing streams. Roads should not divert water to or from karst features. Measures shall be taken to reduce erosion and sediment transport from the road surface and cutslopes. Sediment traps, cut and fill slope revegetation, and road closure and revegetation may be appropriate.

Recreation/Scenery: No resource concerns were identified.

Heritage Resources: No resource concerns were identified.

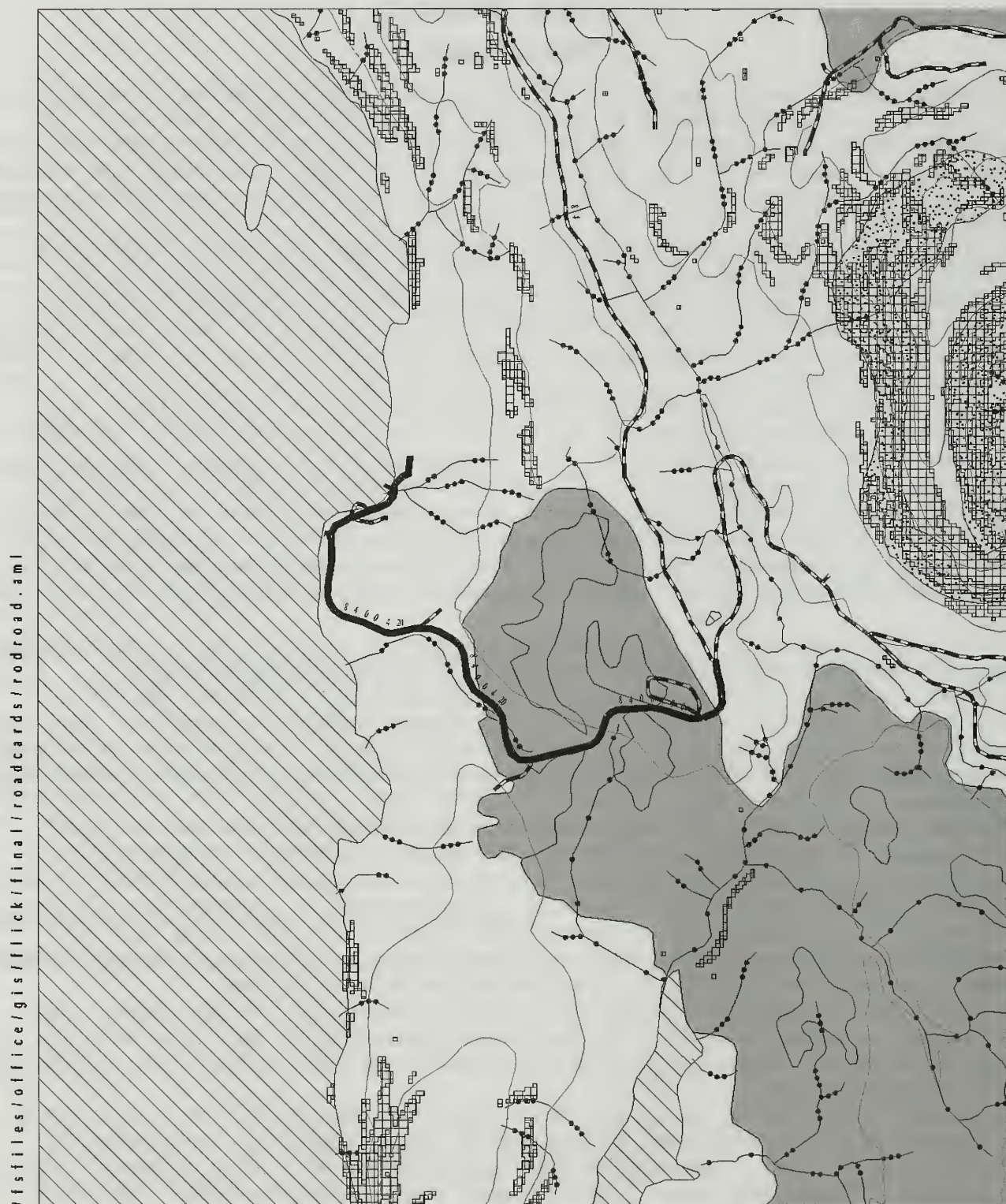
Road Management Objectives

Stream Crossings

Road No. 8400000

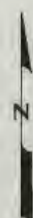
- A.) M.P. 30.282** AHMU: Class IV Channel Type: HC5 Channel Bedwidth: 2.3' Substrate: Boulder Cobble
Gradient Upstream: 11 Gradient Downstream: 14 Structure: CP Passage required: No Timing Dates: N/A
- B.) M.P. 31.437** AHMU: Class II Channel Type: HC2 Channel Bedwidth: 2.6' Substrate: Sand Gravel
Gradient Upstream: 13 Gradient Downstream: 16 Structure: CP Passage required: Yes Timing Dates: 7 June-15 Aug.
Narrative: The Forest Service conducted an Upstream Assessment at this site in 2002; the results will be used to determine work priorities at the Forest Level.
- C.) M.P. 31.556** AHMU: Class IV Channel Type: HC2 Channel Bedwidth: 2.3' Substrate: Cobble Gravel
Gradient Upstream: 9 Gradient Downstream: 32 Structure: CP Passage required: No Timing Dates: N/A
- D.) M.P. 31.608** AHMU: Class II Channel Type: HC2 Channel Bedwidth: 3.0' Substrate: Sand Gravel
Gradient Upstream: 13 Gradient Downstream: 21 Structure: CP Passage required: Yes Timing Dates: 7 June-15 Aug
Narrative: The Forest Service conducted an Upstream Assessment at this site in 2002; the results will be used to determine work priorities at the Forest Level.
- E.) M.P. 32.073** AHMU: Class IV Channel Type: HC5 Channel Bedwidth: 1.0' Substrate: Cobble Gravel
Gradient Upstream: 57 Gradient Downstream: 19 Structure: CP Passage required: No Timing Dates: N/A
- F.) M.P. 33.831** AHMU: Class III Channel Type: HC5 Channel Bedwidth: 5.6' Substrate: Boulder Cobble
Gradient Upstream: 21 Gradient Downstream: 23 Structure: CP Passage required: No Timing Dates: N/A
- G.) M.P. 34.291** AHMU: Class III Channel Type: HC5 Channel Bedwidth: 6.2' Substrate: Bedrock Cobble
Gradient Upstream: 37 Gradient Downstream: 26 Structure: CP Passage required: No Timing Dates: N/A
- H.) M.P. 34.850** AHMU: Class II Channel Type: MM2 Channel Bedwidth: 34.3' Substrate: Sand Gravel
Grad. Upstream: 6 Gradient Downstream: 4 Structure: perm. bridge Passage required: Yes Timing Dates: 7 June-15 Aug
Narrative: This bridge already exists and may not require any additional instream work. If repairs or replacement are needed, then the timing window applies due to direct relationship with anadromous habitat downstream.
- I.) M.P. 35.162** AHMU: Class II Channel Type: MM1 Channel Bedwidth: 7.5' Substrate: Sand Cobble
Gradient Upstream: 6 Gradient Downstream: 7 Structure: CP Passage required: Yes Timing Dates: N/A
Narrative: The Forest Service conduct an Upstream Assessment at this site in 2002, the results will be used to determine work priorities at the Forest Level. This crossing is far enough upstream that it would have little to no influence on salmon located downstream.
- J.) M.P. 36.256** AHMU: Class II Channel Type: MM1 Channel Bedwidth: 13.3' Substrate: Gravel Cobble
Gradient Upstream: 3 Gradient Downstream: 2 Structure: CP Passage required: Yes Timing Dates: N/A
Narrative: This crossing is far enough upstream that it would have little to no influence on salmon located downstream.
- K.) M.P. 36.267** AHMU: Class II Channel Type: MM1 Channel Bedwidth: 9.8' Substrate: Gravel Cobble
Gradient Upstream: 3 Gradient Downstream: 2 Structure: CP Passage required: Yes Timing Dates: N/A
Narrative: The Forest Service conducted an Upstream Assessment at this site in 2002; the results will be used to determine work priorities at the Forest Level. Passage is for resident fish therefore no timing is required.
- L.) M.P. 36.969** AHMU: Class II Channel Type: HC5 Channel Bedwidth: 4.2' Substrate: Boulder Cobble
Gradient Upstream: 34 Gradient Downstream: 32 Structure: CP Passage required: Yes Timing Dates: N/A
Narrative: The Forest Service conducted an Upstream Assessment at this site in 2002; the results will be used to determine work priorities at the Forest Level.
- M.) M.P. 37.230** AHMU: Class IV Channel Type: HC5 Channel Bedwidth: 2.5' Substrate: Boulder Cobble
Gradient Upstream: 26 Gradient Downstream: 42 Structure: CP Passage required: No Timing Dates: N/A
- N.) M.P. 37.359** AHMU: Class I Channel Type: HC2 Channel Bedwidth: 46.5' Substrate: Bedrock and Boulder
Gradient Upstream: 7 Gradient Downstream: 1 Structure: perm. bridge Passage required: Yes Timing Dates: 7 June – 15 August if need to replace or repair.
- O.) M.P. 37.631** AHMU: Class II Channel Type: HC2 Channel Bedwidth: 8.2' Substrate: Boulder Cobble
Gradient Upstream: 9 Gradient Downstream: 0 Structure: CP Passage required: Yes Timing Dates: N/A
- P.) M.P. 37.676** AHMU: Class II Channel Type: HC5 Channel Bedwidth: 4.8' Substrate: Boulder Cobble
Gradient Upstream: 20 Gradient Downstream: 9 Structure: CP Passage required: Yes Timing Dates: N/A
Narrative: The Forest Service re-evaluated this pipe and found it to meet fish passage standards.
- Q.) M.P. 37.887** AHMU: Class IV Channel Type: HC5 Channel Bedwidth: 1.6' Substrate: Boulder Cobble
Gradient Upstream: 34 Gradient Downstream: 41 Structure: CP Passage required: Yes Timing Dates: N/A

Licking Creek Road Card Road 8400420 - Existing



- Class I Stream
- Class II Stream
- Class III Stream
- Class IV Stream
- ++++ ROD Unit Boundary
- Existing Road
- NEPA Cleared Road
- Reconstruct Existing Road
- Project Road

- Selected Road Segment
- Wetland
- MM-Haz 4 Soil
- Potential Slopes GT 65%
- Fresh or Salt Water



Status - Existing
Contour Interval 200 feet
Mapscale 1:18038
June 12, 2003
0 .2 .4 Miles

Note: Compiled from various digital geographic data.
This map may not meet National Map accuracy standards.

Road Management Objectives

Project/EIS Licking Creek	System Licking Creek	Land Use Designation TP
Route No. 8400420		Status Existing
Begin Kilometer Post	Length [kilometers (miles)]	Begin Termini (Kilometer Post)
Road 8000420 begins at intersection with Road 8400000 at Kilometer Post 48.294	2.27 km (1.41 mi)	0.00
		End Termini (Kilometer Post) 2.27

General Design Criteria and Elements

Functional Class	Service Life	Traffic Service Level	Surface	Width	Critical Vehicle	Design Vehicle	Design Speed
L	Long Term	C	Rock	4.3 m	Lowboy	Pickup truck	15 kph

Intended Purpose/Future Use: Uses include silvicultural activities and administrative use. This is the road to the LTF and the road is used by the Coast Guard personnel to access their docking facilities and station.

Maintenance Criteria

Operational Maintenance Level: 2

Objective Maintenance Level: 2

Maintenance Narrative:

Operation Criteria

Highway Safety Act: No

Jurisdiction: National Forest System

AFRPR Status: Open

Travel Management Strategies: This road is used extensively by Coast Guard personnel, and by the Forest Service for administrative uses.

Encourage:	NA
Accept:	High-clearance vehicles
Discourage:	NA
Prohibit:	NA
Eliminate	NA

Travel Management Narrative: Road should be maintained to enhance safety and limit resource damage. Brushing, culvert cleaning, and road blading should be done periodically.

District Ranger Approval (signature): _____ **Date:** _____

Road Management Objectives

Site-Specific Design Criteria

Road No. 8400420

Road Location: This is an existing road and will require only minimal maintenance to meet Road Management Objectives.

Wetlands: Road management along the portion of Road 8400420 that crosses wetlands and requires road maintenance will not further impact wetlands and will not change the existing footprint.

Erosion Control: An erosion control plan for maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMP 12.17, 14.8). During road maintenance activities, Wetlands Protection Measures (BMP 12.5) will be followed. Revegetation of Disturbed Areas (BMP 12.17) and Drainage Control Structures to Minimize Erosion and Sedimentation (BMP 14.9) will be followed. Road Access (BMP 14.20) and Access Management (BMP 14.22) will be implemented. Because the LTF is at the beginning of this road, Oil Pollution Control Measures (BMPs 12.8 and 12.9) will be closely followed. LTF Surface Erosion Control Plan (BMPs 14.26 and 14.27) will be followed.

Rock Pits: Existing rock pits are located for the most economical haul and least impacts to other resources.

Resource Information (If applicable):

Timber/Logging: No resource concerns were identified.

Soils/Water: At Milepost 0.78, gravel is blocking ditch. At Mileposts 0.5-0.6 there is an inadequate ditch, diverting water on road. If maintenance is not done prior to sale, this will require pre-haul maintenance.

Silviculture: Keep road open following harvest to ensure access to units until they are certified as stocked as required by NFMA and to keep potential thinning opportunities viable.

Wildlife/Botany: No resource concerns were identified.

Lands/Minerals/Geology/Karst: No resource concerns were identified.

Recreation/Scenery: No resource concerns were identified.

Heritage Resources: No resource concerns were identified.

Road Management Objectives

Stream Crossings

Road No. 8400420

A.) M.P. 0.559 AHMU: Class II Channel Type: MC1 Channel Bedwidth: 5' Substrate: Sand, Coarse Gravel, Organics

Gradient Upstream: 4 Gradient Downstream: 11 Structure: Existing CP Passage required: No Timing Dates: N/A

Narrative: The Forest Service conducted an Upstream Assessment at this site in 2002; the results will be used to determine work priorities at the Forest Level.

B.) M.P. 0.748 AHMU: Class IV Channel Type: HC5 Channel Bedwidth: 3' Substrate: Bedrock and Boulder

Gradient Upstream: 18 Gradient Downstream: 17 Structure: Existing CP Passage required: No Timing Dates: N/A

C.) M.P. 0.849 AHMU: Class II Channel Type: HC5 Channel Bedwidth: 3' Substrate: Bedrock Boulder

Gradient Upstream: 12 Gradient Downstream: 19 Structure: Existing CP Passage required: Yes Timing Dates: N/A

Narrative: Inlet of culvert buried under rootwad and lip is bent. The Forest Service re-evaluated this crossing and determined that it meets fish crossing standards.

D.) M.P. 1.335 AHMU: Class IV Channel Type: HC2 Channel Bedwidth: 4' Substrate: Bedrock and Boulder

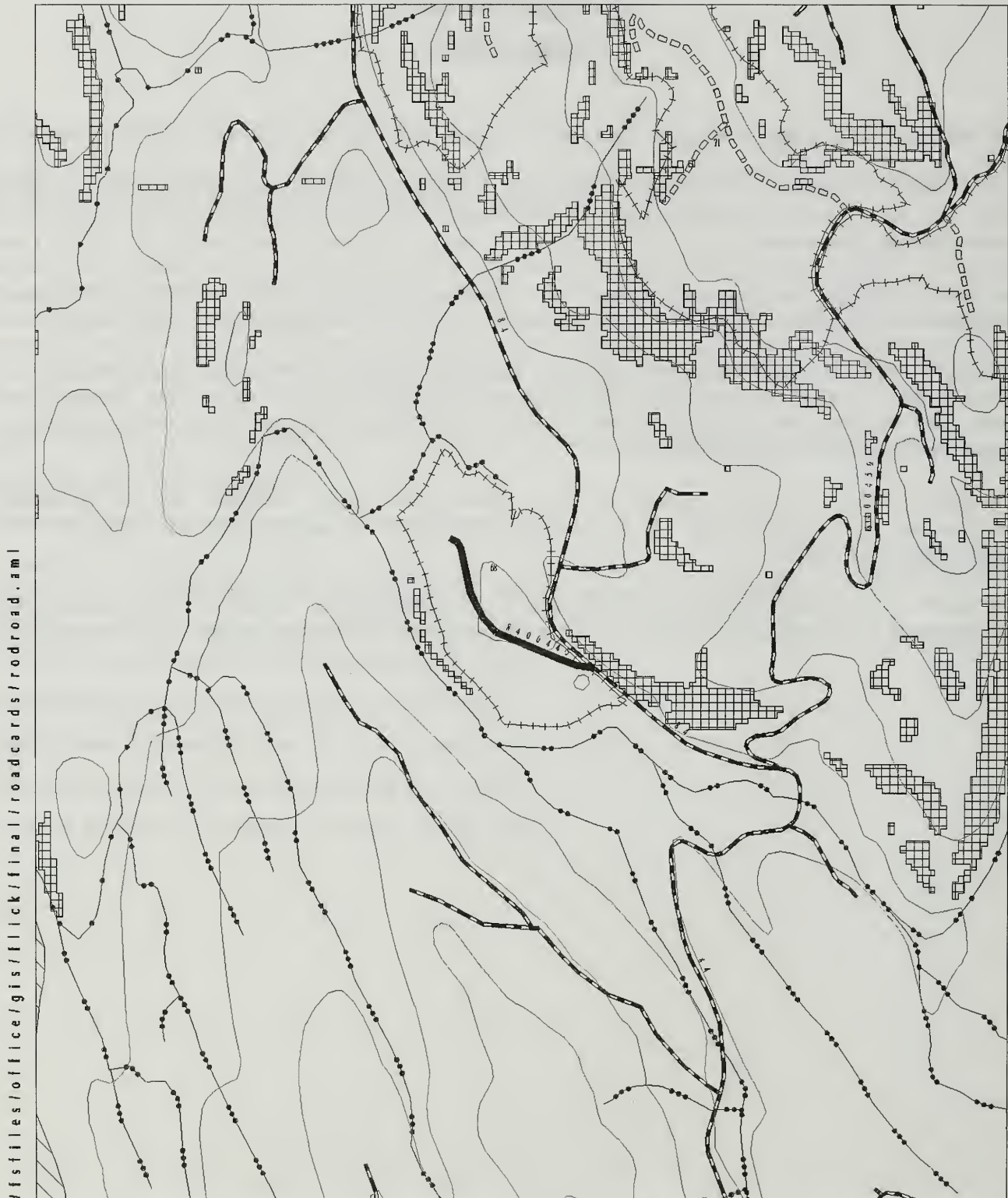
Gradient Upstream: 9 Gradient Downstream: 12 Structure: Existing CP Passage required: No Timing Dates: N/A

Narrative: Whole pipe dented.

E.) M.P. 1.396 AHMU: Class IV Channel Type: HC5 Channel Bedwidth: 3' Substrate: Cobble Boulder, Bedrock

Gradient Upstream: 20 Gradient Downstream: 38 Structure: Existing CP Passage required: No Timing Dates: N/A

Licking Creek Road Card Road 8400445 - Proposed



- Class I Stream
- Class II Stream
- Class III Stream
- Class IV Stream
- ++++ ROD Unit Boundary
- Existing Road
- NEPA Cleared Road
- Reconstruct Existing Road
- Project Road

- Selected Road Segment
- Wetland
- MM-Haz 4 Soil
- Potential Slopes GT 65%
- Fresh or Salt Water

Status - ROD-Proposed

Contour Interval 200 feet

Mapscale 1:11951

June 12, 2003

0 .2 .4 Miles

Note: Compiled from various digital geographic data.
This map may not meet National Map accuracy standards.

Road Management Objectives

Project/EIS Licking Creek Route No. 8400445 Begin Kilometer Post Road 8400445 begins at the intersection of Road 8400000 Kilometer Post 53.583	System Licking Creek Length [kilometers (miles)] 0.435 km (0.27mi)	Land Use Designation TP Status New Construction Begin Termini (Kilometer Post) 0.000 End Termini (Kilometer Post) 0.435
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General Design Criteria and Elements

Functional Class	Service Life	Traffic Service Level	Surface	Width	Critical Vehicle	Design Vehicle	Design Speed
L	LI	D	Rock	4.3 m	Log truck	Log truck	15 kph

Intended Purpose/Future Use: Use includes silvicultural activities.

Maintenance Criteria

Operational Maintenance Level: 2

Objective Maintenance Level: 1

Maintenance Narrative:

Operation Criteria

Highway Safety Act: No

Jurisdiction: National Forest System

AFRPR Status: Closed

Travel Management Strategies:

Encourage:	NA
Accept:	Hikers, bicycles, ORVs
Discourage:	NA
Prohibit:	NA
Eliminate	Vehicle traffic

Travel Management Narrative: Remove all drainage structures upon completion of silvicultural activities. Water bar and grass seed entire roadway.

District Ranger Approval (signature): _____ **Date:** _____

Road Management Objectives

Site-Specific Design Criteria

Road No. 8400445

Road Location: Road accesses Unit 68. Road construction should be moderate to easy over most portions of the road. Road is located to accommodate logging systems and still have the least impact on other resources. There are no sections where road location crosses steep slopes over 67 percent.

Wetlands: No crossing of wetlands is anticipated. Should wetland areas be identified during final layout, the road will be modified to avoid or minimize effects on wetlands, and appropriate standards will be applied (BMP 12.5).

Erosion Control: An erosion control plan for maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMPs 12.17 and 14.8). This is new road construction. The recommendations referred to in the Resource Information, BMPs 12.5, 12.17, and 14.8, are to be followed. In addition, during construction, Controlled Excavation and Side Cast (BMP 14.12) and Drainage Control Structures to Minimize Erosion and Sedimentation (BMP 14.9) will be followed.

Rock Pits: Rock pits will be located for the most economical haul and least impacts to other resources. Rock pits will be approximately 1 mile apart; specific locations will be determined during final road layout.

Resource Information (If applicable):

Timber/Logging: No resource concerns were identified.

Soils/Water: Provide cross drains where needed to provide for the passage of surface water and aquatic organisms (BMP 12.5). Erosion control seeding of cutbanks and fill slopes should be implemented as soon as possible following construction (BMPs 12.17 and 14.8).

Silviculture: Maintaining the road as open is not necessary to fulfill silvicultural needs.

Wildlife/Botany: No resource concerns were identified.

Lands/Minerals/Geology/Karst: No resource concerns were identified.

Recreation/Scenery: No resource concerns were identified.

Heritage Resources: No resource concerns were identified.

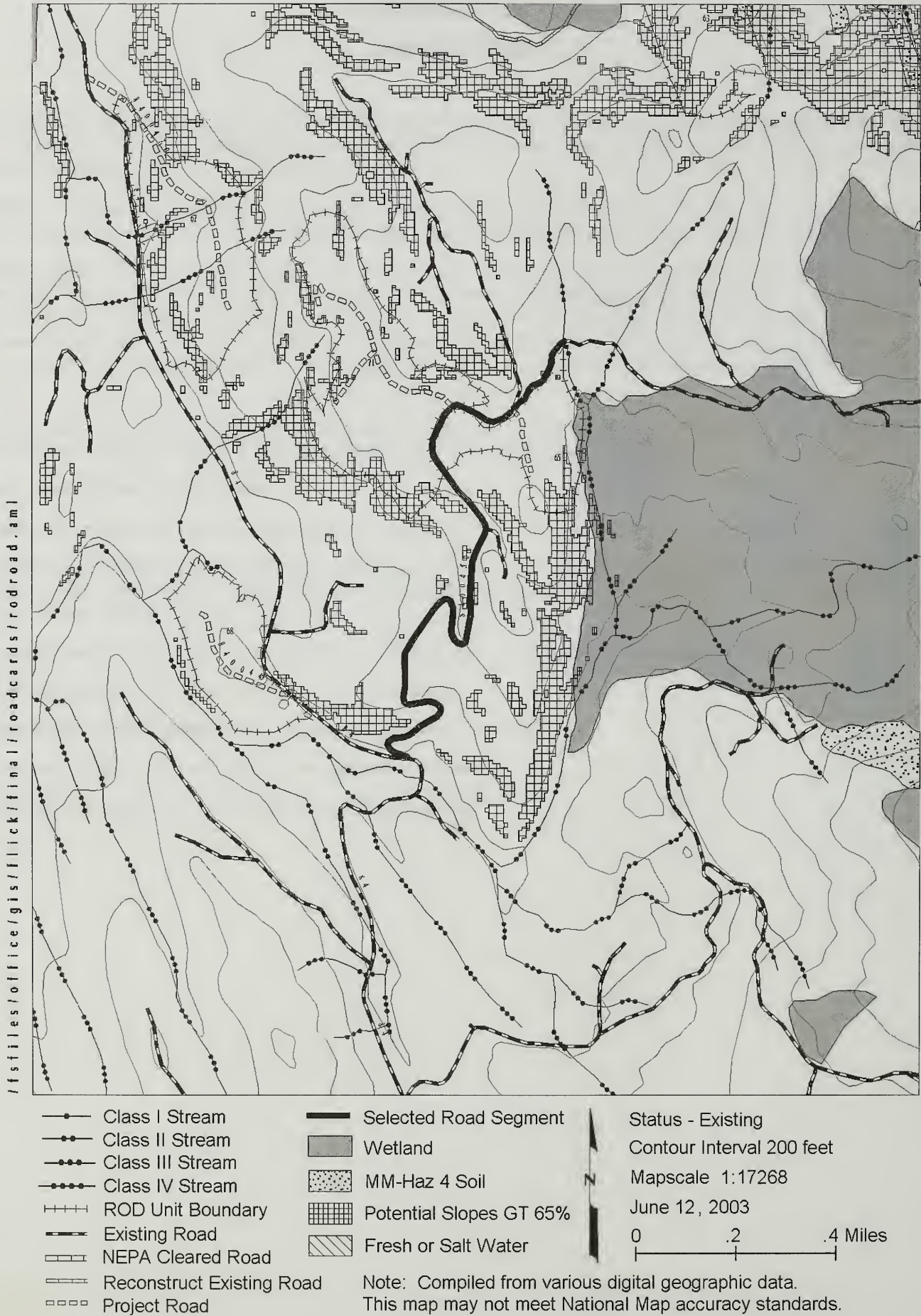
Road Management Objectives

Stream Crossings

Road No. 8400445

No streams are crossed on this road.

Licking Creek Road Card
Road 8400450 - Existing



Road Management Objectives

Project/EIS Licking Creek	System Licking Creek	Land Use Designation TP
Route No. 8400450		Status Existing
Begin Kilometer Post Road 8400450 begins at the intersection with Road 8400000 Kilometer Post 53.15	Length [kilometers (miles)] 2.35 km (1.46 mi)	Begin Termini (Kilometer Post) 0.000 End Termini (Kilometer Post) 2.35

General Design Criteria and Elements

Functional Class	Service Life	Traffic Service Level	Surface	Width	Critical Vehicle	Design Vehicle	Design Speed
L	LI	D	Rock	4.3 m	Lowboy	Log truck	15 kph

Intended Purpose/Future Use: Use includes silvicultural activities.

Maintenance Criteria

Operational Maintenance Level: 2

Objective Maintenance Level: 2

Maintenance Narrative: Prior to use for the Licking Creek project, road will require brushing, blading, ditchline cleaning, replacement of CMPs, and seeding.

Operation Criteria

Highway Safety Act: No

Jurisdiction: National Forest System

AFRPR Status: Open

Travel Management Strategies:

Encourage:	NA
Accept:	High-clearance vehicles
Discourage:	NA
Prohibit:	NA
Eliminate	NA

Travel Management Narrative: Road is to remain open. Road maintenance will be kept current, brushing, culverts maintained, road graded and slide removal.

District Ranger Approval (signature): _____ **Date:** _____

Road Management Objectives

Site-Specific Design Criteria

Road No. 8400450

Road Location: Existing road requires minimal maintenance to achieve Road Management Objectives. During pre-haul maintenance, soils/water concerns will be addressed.

Wetlands: Existing road section does not cross wetlands.

Erosion Control: An erosion control plan for maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMPs 12.17 and 14.8). During road maintenance activities, Wetlands Protection Measures (BMP 12.5) will be followed. Revegetation of Disturbed Areas (BMP 12.17) and Drainage Control Structures to Minimize Erosion and Sedimentation (BMP 14.9) will be followed. Road Access (BMP 14.20) and Access Management (BMP 14.22) will be implemented.

Rock Pits: Existing rock pits are located for the most economical haul and least impacts to other resources.

Resource Information (If applicable):

Timber/Logging: No resource concerns were identified.

Soils/Water: Pre-haul maintenance should address cut slope erosion at 1.5 miles; bank needs seeding. Ditch is shallow between Milepost 0.07-0.67 and plugged intermittently from Milepost 0.07-1.46. At Milepost 0.8, there is a slide in the ditch. At Milepost 1.1, there are remnants of a snag plugging the ditch. At Mileposts 0.13, 0.24, 0.45, and 1.421, culverts are needed. Shoulder is sloughing between Mileposts 0.9 and 1.0.

Silviculture: Keep road open following harvest as to ensure access to units until they are certified as stocked and to keep potential thinning opportunities in the project area viable.

Wildlife/Botany: No resource concerns were identified.

Lands/Minerals/Geology/Karst: No resource concerns were identified. No quarry shall be developed on top of karst without adequate site survey and design. Roads shall, to the extent feasible, avoid sinkholes and other collapse features and losing streams. Roads should not divert water to or from karst features. Measures shall be taken to reduce erosion and sediment transport from the road surface and cutslopes. Sediment traps, cut and fill slope revegetation, and road closure and revegetation may be appropriate.

Recreation/Scenery: No resource concerns were identified.

Heritage Resources: No resource concerns were identified.

Road Management Objectives

Stream Crossings

Road No. 8400450

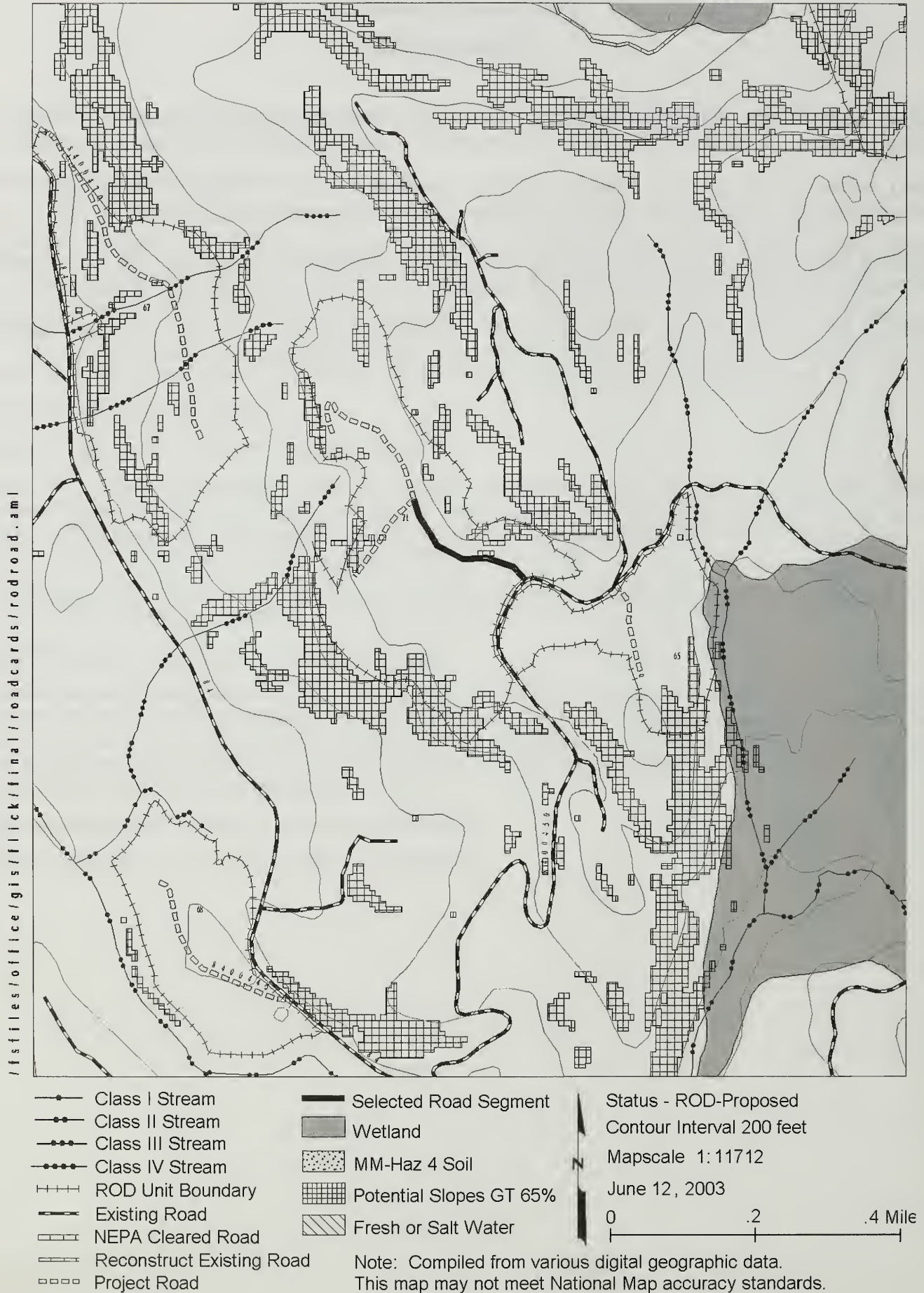
A.) M.P. 0.879 AHMU: Class III Channel Type: HC2 Channel Bedwidth: 4.5' Substrate: Cobble Gravel
Gradient Upstream: 10 Gradient Downstream: 12 Structure: CP Passage required: No Timing Dates: N/A

B.) M.P. 1.095 AHMU: Class IV Channel Type: MM Channel Bedwidth: 2.1' Substrate: Cobble Gravel
Gradient Upstream: 1 Gradient Downstream: 1 Structure: CP Passage required: No Timing Dates: N/A

C.) M.P. 1.457 AHMU: Class III Channel Type: HC1 Channel Bedwidth: 3.5' Substrate: Fine Gravel/Small Cobble
Gradient Upstream: 19 Gradient Downstream: 15 Structure: CP Passage required: No Timing Dates: N/A

D.) M.P. 1.487 AHMU: Class III Channel Type: HC1 Channel Bedwidth: 3.5' Substrate: Fine Gravel/Small Cobble
Gradient Upstream: 15 Gradient Downstream: 18 Structure: CP Passage required: No Timing Dates: N/A

Licking Creek Road Card
Road 8400451 - Proposed



Road Management Objectives

Project/EIS Licking Creek	System Licking Creek	Land Use Designation TP
Route No. 8400451		Status New Construction
Begin Kilometer Post Road 8400451 intersects Road 8400450 at Kilometer Post 0.470	Length [kilometers (miles)] 0.386 km (0.24 mi)	Begin Termini (Kilometer Post) 0.000
		End Termini (Kilometer Post) 0.386

General Design Criteria and Elements

Functional Class	Service Life	Traffic Service Level	Surface	Width	Critical Vehicle	Design Vehicle	Design Speed
L	LI	D	Rock	4.3 m	Log truck	Log truck	15 kph

Intended Purpose/Future Use: Use includes silvicultural activities.

Maintenance Criteria

Operational Maintenance Level: 2

Objective Maintenance Level: 1

Maintenance Narrative:

Operation Criteria

Highway Safety Act: No

Jurisdiction: National Forest System

AFRPR Status: Closed

Travel Management Strategies:

Encourage:	NA
Accept:	Hikers, bicycles, ORVs
Discourage:	NA
Prohibit:	NA
Eliminate	Vehicle traffic

Travel Management Narrative: Remove all drainage structures upon completion of silvicultural activities. Water bar and grass seed entire roadway.

District Ranger Approval (signature): _____ **Date:** _____

Road Management Objectives

Site-Specific Design Criteria

Road No. 8400451

Road Location: Road accesses Unit 71. Road was located to avoid steep cliffs near east side of unit. Road construction will be moderate to easy with little impact on terrain. Grades where road is located are under 10 percent and only at the terminus of the road are sideslopes greater than 30 percent.

Wetlands: No crossing of wetlands is anticipated. Should wetland areas be identified during final layout, the road will be modified to avoid or minimize effects on wetlands, and appropriate standards will be applied (BMP 12.5).

Erosion Control: An erosion control plan for maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMP 12.17, 14.8). This is new road construction. The recommendations referred to in the Resource Information, BMPs 12.5, 12.17, and 14.8 are to be followed. In addition, during construction, Controlled Excavation and Side Cast (BMP 14.12) and Drainage Control Structures to Minimize Erosion and Sedimentation (BMP 14.9) will be followed.

Rock Pits: Rock pits will be located for the most economical haul and least impacts to other resources. Rock pits will be approximately 1 mile apart; specific locations will be determined during final road layout.

Resource Information (If applicable):

Timber/Logging: No resource concerns were identified.

Soils/Water: Provide cross drains where needed to provide for the passage of surface water and aquatic organisms (BMP 12.5). Erosion control seeding of cutbanks and fill slopes should be implemented as soon as possible following construction (BMPs 12.17 and 14.8).

Silviculture: Maintaining the road as open is not necessary to fulfill silvicultural needs.

Wildlife/Botany: A marbled murrelet nest was reported in Unit 71; a 600-foot forested buffer around the nest site will be applied.

Lands/Minerals/Geology/Karst: Existing roads and quarries will be utilized in preference to the construction of new ones. Roads shall, to the extent feasible, avoid sinkholes and other collapse features and losing streams. Roads should not divert water to or from karst features. Measures shall be taken to reduce erosion and sediment transport from the road surface and cutslopes. Sediment traps, cut and fill slope revegetation, and road closure and revegetation may be appropriate. Because karst development is more intense here, additional design criteria may be required. Such criteria may relate to road construction methods, blasting, culvert placement and density, and sediment retention and erosion prevention. No quarry shall be developed on top of karst without adequate site survey and design. Quarries should be properly closed after abandonment. A "plan-in-hand" review of proposed road construction prior to actual construction is required.

Recreation/Scenery: No resource concerns were identified.

Heritage Resources: No resource concerns were identified.

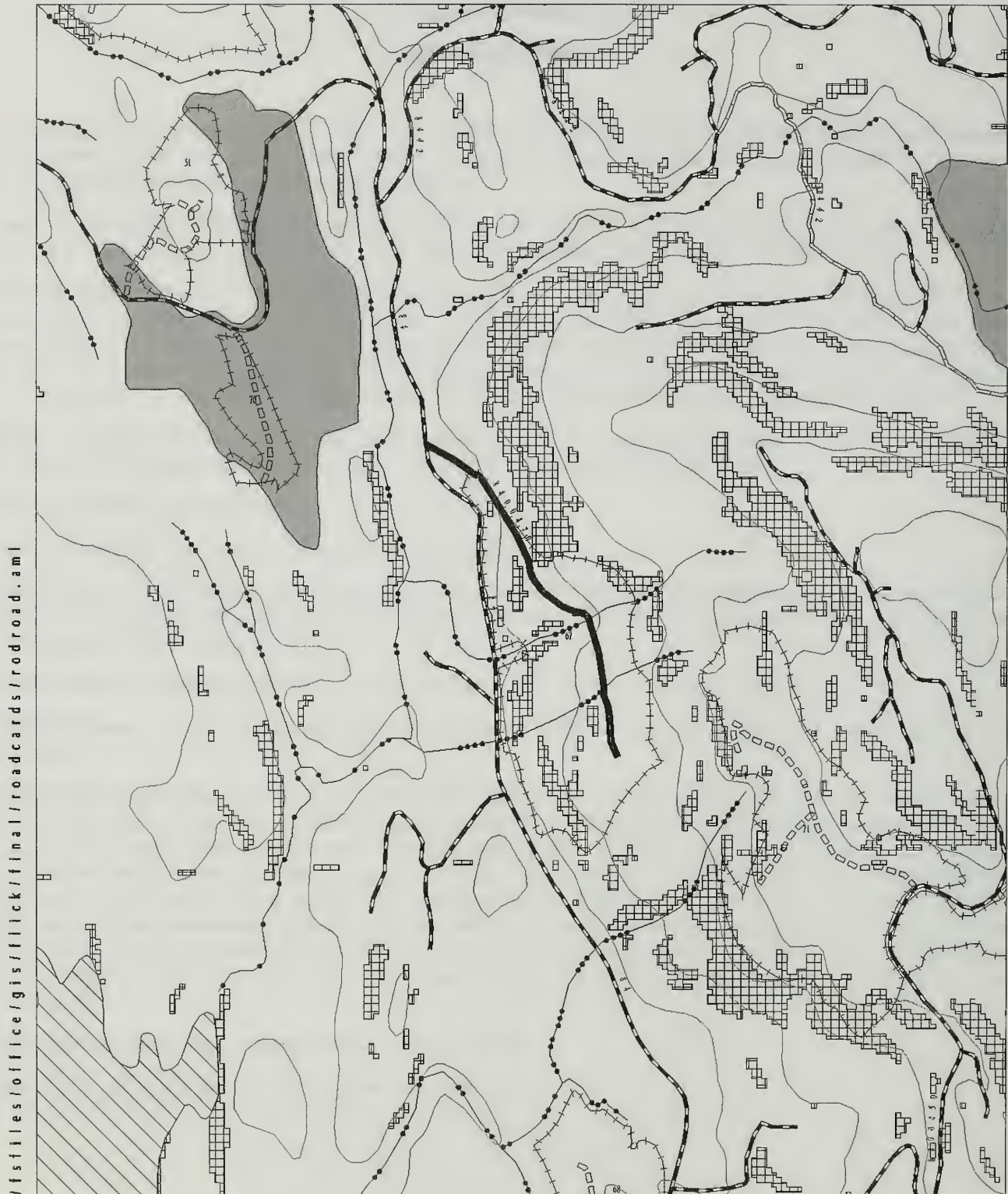
Road Management Objectives

Stream Crossings

Road No. 8400451

No streams are crossed on this road.

Licking Creek Road Card Road 8400470 - Proposed



- Class I Stream
- Class II Stream
- Class III Stream
- Class IV Stream
- +—+—+— ROD Unit Boundary
- Existing Road
- NEPA Cleared Road
- Reconstruct Existing Road
- Project Road

- Selected Road Segment
- Wetland
- MM-Haz 4 Soil
- Potential Slopes GT 65%
- Fresh or Salt Water

Status - ROD-Proposed
Contour Interval 200 feet
Mapscale 1:14039
June 12, 2003
0 0.2 4 Miles

Note: Compiled from various digital geographic data.
This map may not meet National Map accuracy standards.

Road Management Objectives

Project/EIS Licking Creek	System Licking Creek	Land Use Designation ML
Route No. 8400470		Status New construction
Begin Kilometer Post Road 8400470 begins at intersection with Road 8400000 at Kilometer Post 55.734	Length [kilometers (miles)] 0.933 km (0.58 mi)	Begin Termini (Kilometer Post) 0.000 End Termini (Kilometer Post) 0.933

General Design Criteria and Elements

Functional Class	Service Life	Traffic Service Level	Surface	Width	Critical Vehicle	Design Vehicle	Design Speed
L	LI	D	Rock	4.3 m	Log truck	Log truck	15 kph

Intended Purpose/Future Use: Use includes silvicultural activities.

Maintenance Criteria

Operational Maintenance Level: 2

Objective Maintenance Level: 1

Maintenance Narrative:

Operation Criteria

Highway Safety Act: No

Jurisdiction: National Forest System

AFRPR Status: Closed

Travel Management Strategies:

Encourage:	NA
Accept:	Hikers, bicycles, ORVs
Discourage:	NA
Prohibit:	NA
Eliminate	Vehicle traffic

Travel Management Narrative: Remove all drainage structures upon completion of silvicultural activities. Water bar and grass seed entire roadway.

District Ranger Approval (signature): _____ **Date:** _____

Road Management Objectives

Site-Specific Design Criteria

Road No. 8400470

Road Location: Road location begins on Road 8400000 km 55.734 and accesses Unit 67. The first 275 meters are in a cutover section of timbered lands. Road location then begins a favorable grade of 15 percent to gain elevation, and avoids the steep rock face immediately to the east and out of the unit. This continues for 1.5 km and crosses a minimal amount of wetlands. Road is located at this point to cross a drainage at its best location, above where it becomes steep and wide. Road may be either composite or spur for the remainder of the road as slopes are less than 25-30 percent. Because the road avoids steep areas and is located to avoid the rock face, construction will be moderate. If sideslopes greater than 67 percent are found, then excavation will be end hauled.

Wetlands: Use overlay road construction on wetlands and minimize side ditching, where practicable, to minimize the effects upon groundwater flow (BMP 14.3). Avoid the placement of fill material or the side casting of waste material in wetlands (BMP 14.19).

Erosion Control: An erosion control plan for maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMP 12.17, 14.8). This is new road construction. The recommendations referred to in the Resource Information, BMPs 12.5, 12.17, and 14.8 are to be followed. In addition, during construction, Controlled Excavation and Side Cast (BMP 14.12) and Drainage Control Structures to Minimize Erosion and Sedimentation (BMP 14.9) will be followed.

Rock Pits: Rock pits will be located for the most economical haul and least impacts to other resources. Rock pits will be approximately 1 mile apart; specific locations will be determined during final road layout.

Resource Information (If applicable):

Timber/Logging: No resource concerns were identified.

Soils/Water: Provide cross drains where needed to provide for the passage of surface water and aquatic organisms (BMP 12.5). Erosion control seeding of cutbanks and fill slopes should be implemented as soon as possible following construction (BMPs 12.17 and 14.8).

Silviculture: Maintaining the road as open is not necessary to fulfill silvicultural needs.

Wildlife/Botany: No resource concerns were identified.

Lands/Minerals/Geology/Karst: No resource concerns were identified.

Recreation/Scenery: Part of the road is visible from Carroll Inlet. Avoid side casting on downhill side of road.

Heritage Resources: No resource concerns were identified.

Road Management Objectives

Stream Crossings

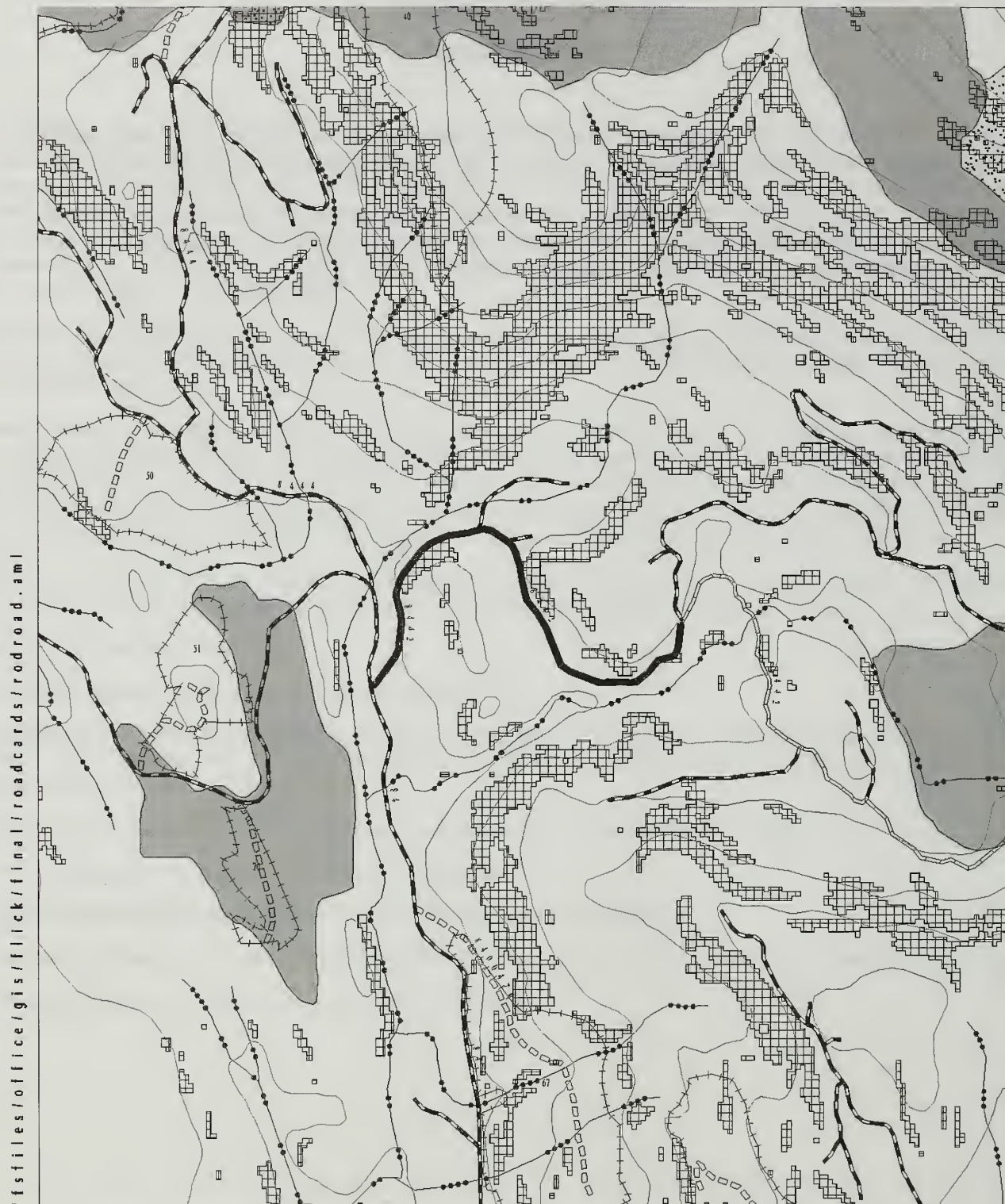
Road No. 8400470

A.) M.P. 0.366 AHMU: Class IV Channel Type: HC5 Channel Bedwidth: 4.2' Substrate: Cobble Gravel
Gradient Upstream: 31 Gradient Downstream: 33 Structure: CP Passage required: No Timing Dates: N/A

B.) M.P. 0.479 AHMU: Class IV Channel Type: HC5 Channel Bedwidth: 2.3' Substrate: Cobble Gravel
Gradient Upstream: 22 Gradient Downstream: 54 Structure: CP Passage required: No Timing Dates: N/A

Narrative: The stream is not shown on map; this crossing was identified in the field.

Licking Creek Road Card Road 8442 (8442000) - Existing



/fsfiles/office/gis/flick/final/roadcards/rodroad.aml

- | | |
|-----------------------------|---------------------------|
| —●— Class I Stream | — Selected Road Segment |
| —●●— Class II Stream | ■ Wetland |
| —●●●— Class III Stream | ■ MM-Haz 4 Soil |
| —●●●●— Class IV Stream | ■ Potential Slopes GT 65% |
| —+— ROD Unit Boundary | ■ Fresh or Salt Water |
| — Existing Road | |
| — NEPA Cleared Road | |
| — Reconstruct Existing Road | |
| — Project Road | |



Status - Existing
Contour Interval 200 feet
Mapscale 1:15376
June 12, 2003
0 .2 .4 Miles

Note: Compiled from various digital geographic data.
This map may not meet National Map accuracy standards.

Road Management Objectives

Project/EIS Licking Creek	System Licking Creek	Land Use Designation TP
Route No. 8442000-Existing		Status Existing
Begin Kilometer Post Road 8442000 begins at the intersection with Road 8400000 Kilometer Post 56.365	Length [kilometers (miles)] 1.417 km (0.88 mi)	Begin Termini (Kilometer Post) 0.000 km
		End Termini (Kilometer Post) 1.417

General Design Criteria and Elements

Functional Class	Service Life	Traffic Service Level	Surface	Width	Critical Vehicle	Design Vehicle	Design Speed
C	Long Term	D	Rock	4.3 m	Lowboy	Log truck	15 kph

Intended Purpose/Future Use: Uses include silvicultural activities and administrative use.

Maintenance Criteria

Operational Maintenance Level: 2

Objective Maintenance Level: 2

Maintenance Narrative:

Operation Criteria

Highway Safety Act: No

Jurisdiction: National Forest System

AFRPR Status: Open

Travel Management Strategies:

Encourage:	NA
Accept:	High-clearance vehicles
Discourage:	NA
Prohibit:	NA
Eliminate	NA

Travel Management Narrative: Road will remain open for Forest Service administrative purposes. Road will have maintenance on a scheduled time frame to preserve the resources accessed by this road. Bridge is to remain through current 10-year action plan for timber sales unless approved for removal by District Ranger.

District Ranger Approval (signature:) _____

Date: _____

Road Management Objectives

Site-Specific Design Criteria

Road No. 8442000-Existing

Road Location: Existing road requires a minimal amount of maintenance to achieve Road Management Objectives. Only the first 1.465 kilometers of road will need the minimal maintenance. This is followed by a section of reconstruction shown on 8442000-R road card. Beyond this reconstruction, no maintenance will occur. During pre-haul maintenance, soils/water concerns will be addressed.

Wetlands: Existing road section does not cross wetlands.

Erosion Control: An erosion control plan for maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMPs 12.17 and 14.8). Items addressed in Resource Information will be corrected during road maintenance activities. Wetlands Protection Measures (BMP 12.5) will be followed. Revegetation of Disturbed Areas (BMP 12.17) and Drainage Control Structures to Minimize Erosion and Sedimentation (BMP 14.9) will be followed. Road Access (BMP 14.20) and Access Management (BMP 14.22) will be implemented.

Rock Pits: Existing rock pits are located for the most economical haul and least impacts to other resources.

Resource Information (If applicable):

Timber/Logging: No resource concerns were identified.

Soils/Water: Pre-haul maintenance should address the following issue: a shallow ditch between Mileposts 0.08 and 0.538. Erosion control seeding of cutbanks and fill slopes should be implemented as soon as possible following reconstruction (BMPs 12.17 and 14.8).

Silviculture: Keep the lower segment of this road open for at least 3 years following harvest to fulfill silvicultural needs. The upper segment of this road may be closed as it is not needed to fulfill silvicultural needs.

Wildlife/Botany: No resource concerns were identified.

Lands/Minerals/Geology/Karst: No resource concerns were identified. No quarry shall be developed on top of karst without adequate site survey and design. Roads shall, to the extent feasible, avoid sinkholes and other collapse features and losing streams. Roads should not divert water to or from karst features. Measures shall be taken to reduce erosion and sediment transport from the road surface and cutslopes. Sediment traps, cut and fill slope revegetation, and road closure and revegetation may be appropriate.

Recreation/Scenery: No resource concerns were identified.

Heritage Resources: No resource concerns were identified.

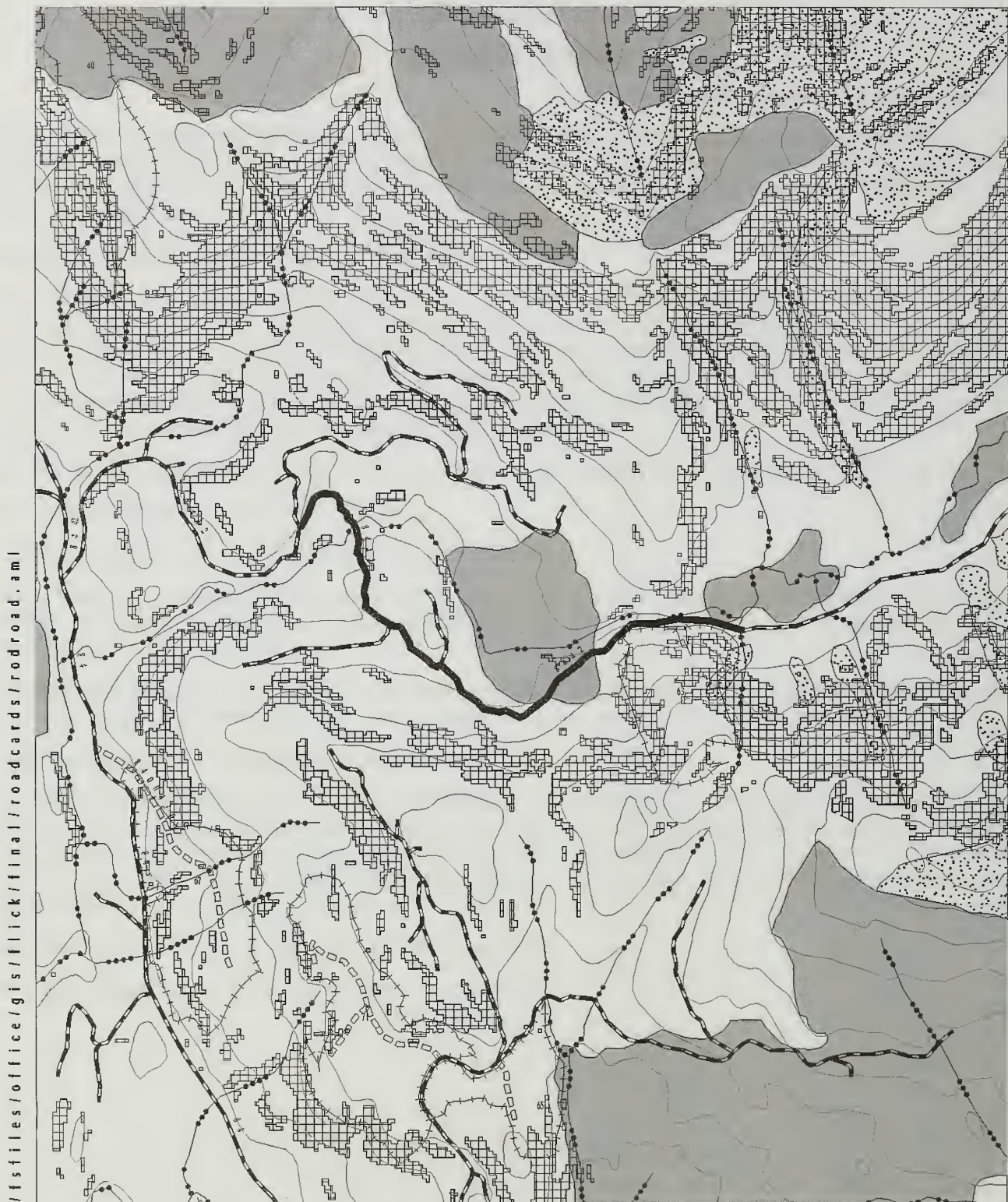
Road Management Objectives

Stream Crossings

Road No. 8442000-E

No designated streams are crossed on this road section.

Licking Creek Road Card
Road 8442 (8442000) - Reconstruction



- | | |
|-----------------------------|---------------------------|
| —●— Class I Stream | — Selected Road Segment |
| —●●— Class II Stream | ■ Wetland |
| —●●●— Class III Stream | ■ MM-Haz 4 Soil |
| —●●●●— Class IV Stream | ■ Potential Slopes GT 65% |
| +++ ROD Unit Boundary | ■ Fresh or Salt Water |
| — Existing Road | |
| — NEPA Cleared Road | |
| — Reconstruct Existing Road | |
| □□□ Project Road | |

Status - To Be Reconstructed

Contour Interval 200 feet

Mapscale 1: 20037

June 12, 2003

0 .2 .4 Miles

Note: Compiled from various digital geographic data.
 This map may not meet National Map accuracy standards.

Road Management Objectives

Project/EIS Licking Creek	System Licking Creek	Land Use Designation TP
Route No. 8442000-Reconstruction		Status Reconstruction
Begin Kilometer Post Road 8442000 begins at the intersection with Road 8400000 Kilometer Post 56.365	Length [kilometers (miles)] 2.206 km (1.37 mi)	Begin Termini Kilometer Post 1.417
		End Termini Kilometer Post 3.623

General Design Criteria and Elements

Functional Class	Service Life	Traffic Service Level	Surface	Width	Critical Vehicle	Design Vehicle	Design Speed
C	LI	D	Rock	4.3 m	Pickup truck	Pickup truck	25 kph

Intended Purpose/Future Use: Use includes silvicultural activities.

Maintenance Criteria

Operational Maintenance Level: 2

Objective Maintenance Level: 2

Maintenance Narrative: To access the units, 2.206 kilometers of road will be reconstructed, and 1.417 kilometers will have light maintenance (see existing Road 8442000 road card). At the end of silvicultural activities, road will be maintained for use by administrative vehicles.

Operation Criteria

Highway Safety Act: No

Jurisdiction: National Forest System

AFRPR Status: Open

Travel Management Strategies:

Encourage:	NA
Accept:	High-clearance vehicles
Discourage:	NA
Prohibit:	NA
Eliminate	NA

Travel Management Narrative: Reconstruction will be needed on 2.96 kilometers of road to bring road up to necessary level for silvicultural activities. Reconstruction will consist of replacing culverts and other drainage structures, reestablishing the road prism, and clearing for sight distance brush and overgrowth of trees. At termination of silvicultural activities, road will be maintained to allow administrative vehicles. Bridges will be installed and remain through current 10-year action plan for timber sales, unless approved for removal by District Ranger.

District Ranger Approval (signature): _____ **Date:** _____

Road Management Objectives

Site-Specific Design Criteria

Road No. 8442000-R

Road Location: Existing road is to be reconstructed.

Wetlands: Road reconstruction along the small area in the middle section of Road 8442000-R that crosses wetlands and requires road reconstruction will not further impact wetlands and will not change the existing footprint.

Erosion Control: An erosion control plan for maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMPs 12.17 and 14.8). During road maintenance activities, Wetlands Protection Measures (BMP 12.5) will be followed. Revegetation of Disturbed Areas (BMP 12.17) and Drainage Control Structures to Minimize Erosion and Sedimentation (BMP 14.9) will be followed. Road Access (BMP 14.20) and Access Management (BMP 14.22) will be implemented. When required, drainage structure will be placed during the restricted timing as per Timing Restrictions for Construction Activities/Fisheries Prescriptions (BMP 14.6).

Rock Pits: Rock pits will be located for the most economical haul and least impacts to other resources. Rock pits will be approximately 1 mile apart; specific locations will be determined during final road layout.

Resource Information (If applicable):

Timber/Logging: No resource concerns were identified.

Soils/Water: Avoid the placement of fill material or the side casting of waste material into wetlands or on steep, potentially unstable slopes (BMPs 14.7 and 14.9). Provide cross drains where needed to provide for the passage of surface water and aquatic organisms (BMP 12.5). Erosion control seeding of cutbanks and fill slopes should be implemented as soon as possible following construction (BMPs 12.17 and 14.8).

Silviculture: Keep road open to ensure access to units until they are certified as stocked as required by NFMA.

Wildlife/Botany: No resource concerns were identified.

Lands/Minerals/Geology/Karst: No resource concerns were identified. No quarry shall be developed on top of karst without adequate site survey and design. Roads shall, to the extent feasible, avoid sinkholes and other collapse features and losing streams. Roads should not divert water to or from karst features. Measures shall be taken to reduce erosion and sediment transport from the road surface and cutslopes. Sediment traps, cut and fill slope revegetation, and road closure and revegetation may be appropriate.

Recreation/Scenery: No resource concerns were identified.

Heritage Resources: No resource concerns were identified.

Road Management Objectives

Stream Crossings

Road No. 8442000-R

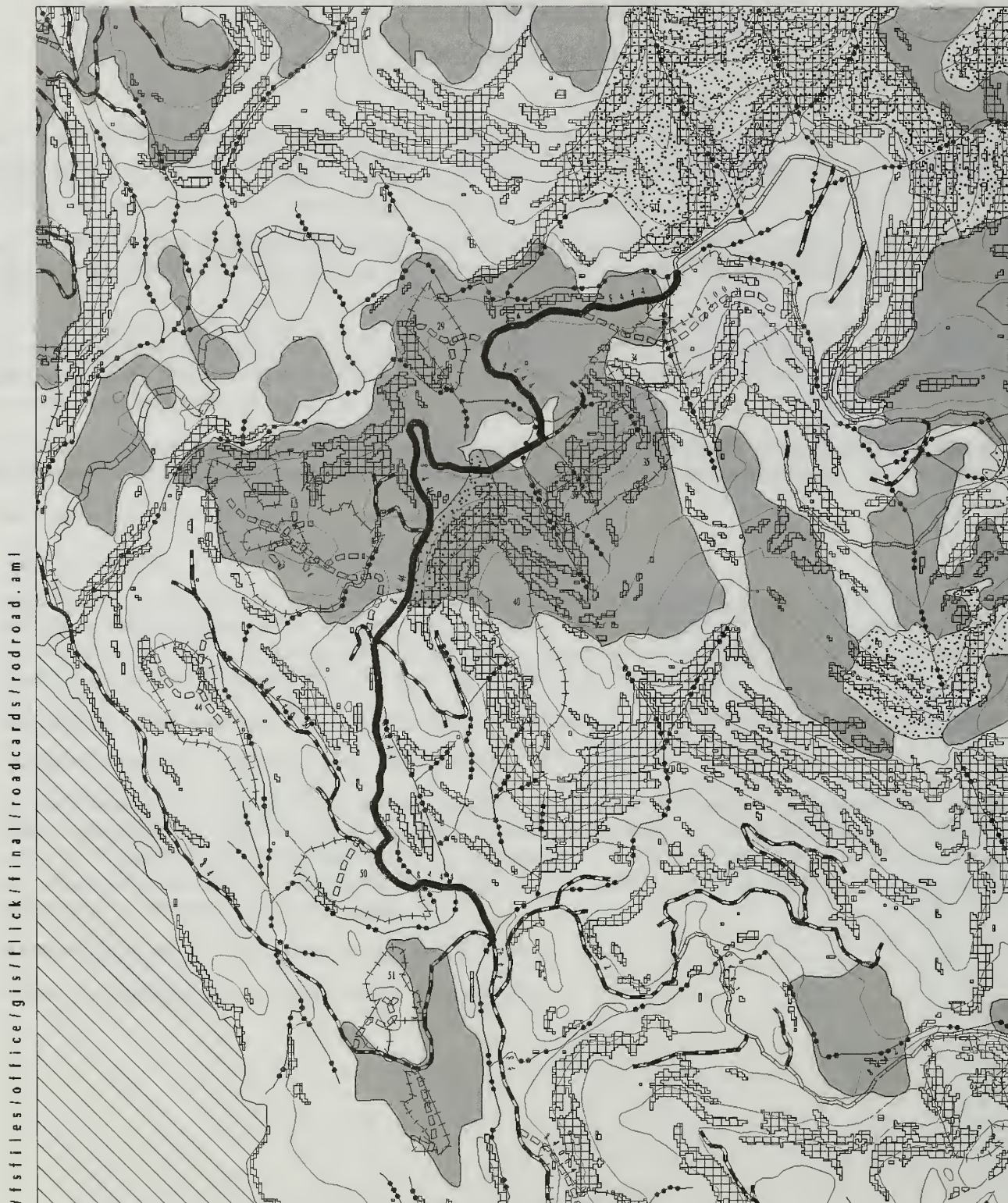
A.) M.P. 1.009 AHMU: Class III Channel Type: MC1 Channel Bedwidth: 10.2' Substrate: Cobble Gravel
Gradient Upstream: 16 Gradient Downstream: 8 Structure: Removed Bridge Passage required: No Timing Dates:
N/A

B.) M.P. 1.106 AHMU: Class II Channel Type: LC1 Channel Bedwidth: 22.0' Substrate: Cobble Gravel
Gradient Upstream: 16 Gradient Downstream: 8 Structure: Removed Bridge Passage required: Yes Timing Dates:
N/A

C.) M.P. 1.727 AHMU: Class IV Channel Type: HC5 Channel Bedwidth: 1.5' Substrate: Cobble Gravel
Gradient Upstream: 46 Gradient Downstream: 36 Structure: Removed Culvert Passage required: No Timing Dates:
N/A

D.) M.P. 1.988 AHMU: Class IV Channel Type: HC5 Channel Bedwidth: 3.1' Substrate: Bedrock Cobble
Gradient Upstream: 26 Gradient Downstream: 13 Structure: Removed Culvert Passage required: No Timing Dates:
N/A

Licking Creek Road Card
Road 8444 (8444000) - Existing



/f:/files/office/gis/flick/final/roadcards/rodroad.aml

- | | | |
|-----------------------------|-------------------------|---------------------------|
| —●— Class I Stream | — Selected Road Segment | Status - Existing |
| —●●— Class II Stream | Wetland | Contour Interval 200 feet |
| —●●●— Class III Stream | MM-Haz 4 Soil | Mapscale 1:25929 |
| —●●●●— Class IV Stream | Potential Slopes GT 65% | June 12, 2003 |
| —+—+— ROD Unit Boundary | Fresh or Salt Water | 0 .2 .4 Miles |
| — Existing Road | | |
| — NEPA Cleared Road | | |
| — Reconstruct Existing Road | | |
| — Project Road | | |
- Note: Compiled from various digital geographic data.
This map may not meet National Map accuracy standards.

Road Management Objectives

Project/EIS Licking Creek	System Licking Creek	Land Use Designation TP
Route No. 8444000-Existing		Status Existing
Begin Kilometer Post Road 8444000 begins at the intersection of Road 8400000 Kilometer Post 56.627.	Length [kilometers (miles)] 5.055 km (3.14 mi)	Begin Termini (Kilometer Post) 0.000
		End Termini (Kilometer Post) 5.055

General Design Criteria and Elements

Functional Class	Service Life	Traffic Service Level	Surface	Width	Critical Vehicle	Design Vehicle	Design Speed
C	Long Term	D	Rock	4.3 m	Lowboy	Log truck	15 kph

Intended Purpose/Future Use: Uses include silvicultural activities and administrative activities.

Maintenance Criteria

Operational Maintenance Level: 2

Objective Maintenance Level: 2

Maintenance Narrative: This is an existing road, presently drivable. Light maintenance will be required—brushing, blading, and ditch cleanup for use on the project.

Operation Criteria

Highway Safety Act: No

Jurisdiction: National Forest System

AFRPR Status: Open

Travel Management Strategies:

Encourage:	NA
Accept:	High-clearance vehicles
Discourage:	NA
Prohibit:	NA
Eliminate	NA

Travel Management Narrative: Road will remain open for Forest Service administrative purposes. Road will have maintenance on a scheduled time frame to preserve the resources accessed by this road. Bridge will remain through current 10-year action plan for timber sales, unless approved for removal by District Ranger.

District Ranger Approval (signature): _____

Date: _____

Road Management Objectives

Site-Specific Design Criteria

Road No. 8444000-Existing

Road Location: Existing road requires minimal maintenance to achieve road management objectives. During pre-haul maintenance, soils/water concerns will be addressed.

Wetlands: Road management along the portion of Road 8444000-E that crosses wetlands and requires road maintenance will not further impact wetlands and will not change the existing footprint.

Erosion Control: An erosion control plan for maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMPs 12.17 and 14.8). During road maintenance activities, Wetlands Protection Measures (BMP 12.5) will be followed. Revegetation of Disturbed Areas (BMP 12.17) and Drainage Control Structures to Minimize Erosion and Sedimentation (BMP 14.9) will be followed. Road Access (BMP 14.20) and Access Management (BMP 14.22) will be implemented.

Rock Pits: Existing rock pits are located for the most economical haul and least impacts to other resources.

Resource Information (If applicable):

Timber/Logging: No resource concerns were identified.

Soils/Water: Pre-haul maintenance will correct the following: blowdown in ditch at Mileposts 0.24, 0.45, 1.15, and 2.76, boulders/rocks in ditch at Mileposts 0.48 and 2.86, rocks in pipe at Milepost 2.91, and cut slope in ditch repeatedly between Mileposts 0.59 and 1, also between Mileposts 2.5 and 2.7. At Milepost 0.5, the ditch needs some reconstruction. At Milepost 1.99, water is on the road from a missing structure. At Milepost 1.37, there is standing water in the ditch—needs pipe.

Silviculture: Keep road open following harvest to ensure access to units until they are certified as stocked, as required by NFMA, and to keep other potential silvicultural activities, such as thinning, viable.

Wildlife/Botany: No resource concerns were identified.

Lands/Minerals/Geology/Karst: No resource concerns were identified. No quarry shall be developed on top of karst without adequate site survey and design. Roads shall, to the extent feasible, avoid sinkholes and other collapse features and losing streams. Roads should not divert water to or from karst features. Measures shall be taken to reduce erosion and sediment transport from the road surface and cutslopes. Sediment traps, cut and fill slope revegetation, and road closure and revegetation may be appropriate.

Recreation/Scenery: No resource concerns were identified.

Heritage Resources: No resource concerns were identified.

Road Management Objectives

Stream Crossings

Road No. 8444000-Existing

A.) M.P. 0.161 AHMU: Class II Channel Type: HC2 Channel Bedwidth: 2.3' Substrate: Boulder Cobble
Gradient Upstream: 8 Gradient Downstream: 7 Structure: CP Passage required: Yes Timing Dates: N/A

B.) M.P. 0.205 AHMU: Class III Channel Type: HC2 Channel Bedwidth: 5.1' Substrate: Cobble Gravel
Gradient Upstream: 9 Gradient Downstream: 13 Structure: CP Passage required: No Timing Dates: N/A

C.) M.P. 1.894 AHMU: Class IV Channel Type: HC5 Channel Bedwidth: 1.8' Substrate: Boulder Bedrock
Gradient Upstream: 36 Gradient Downstream: 18 Structure: CP Passage required: No Timing Dates: N/A

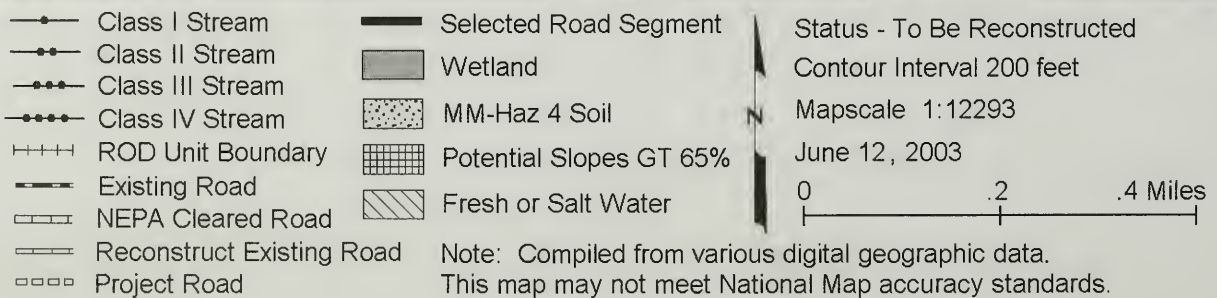
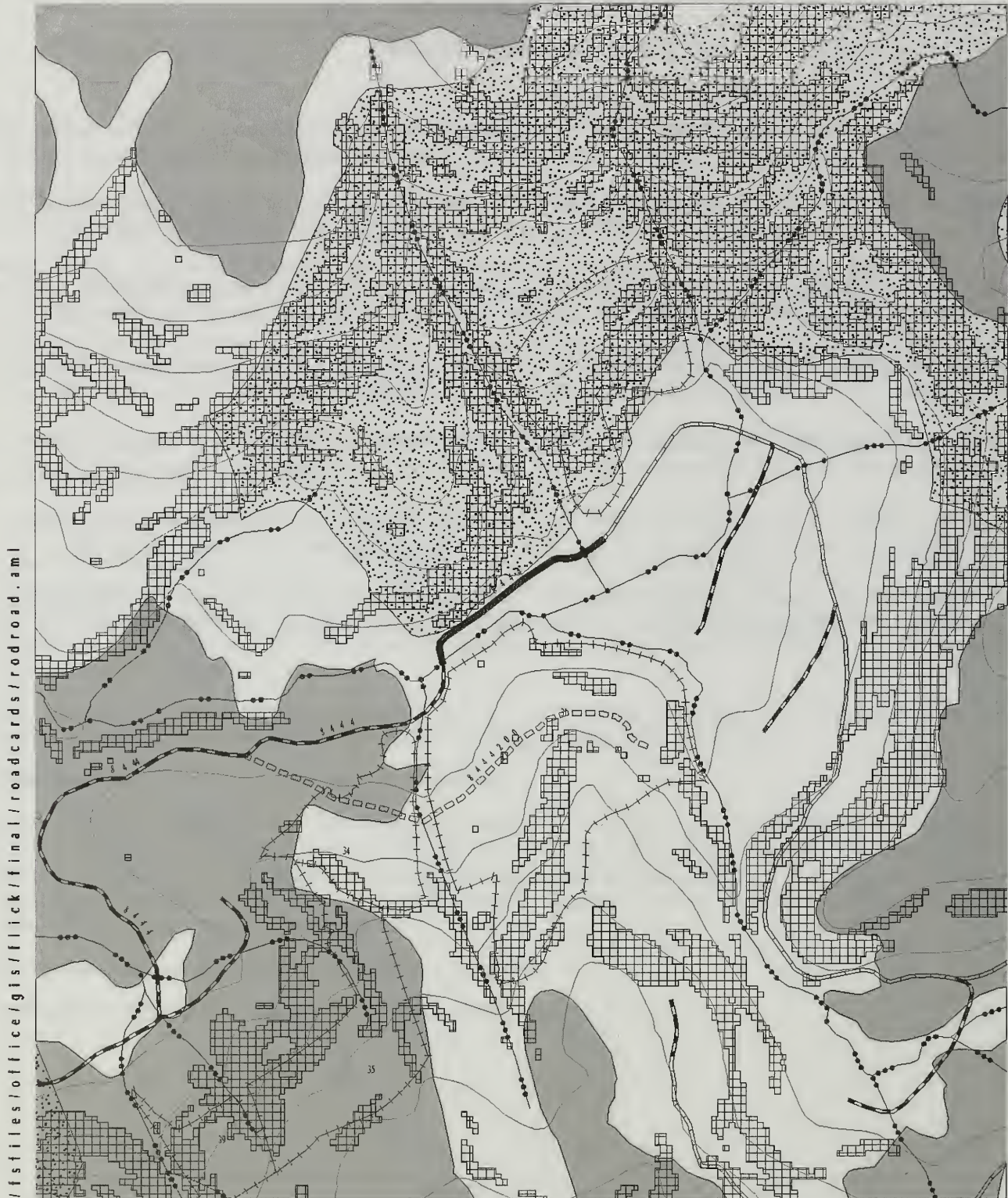
D.) M.P. 2.079 AHMU: Class IV Channel Type: HC5 Channel Bedwidth: 2.3' Substrate: Bedrock Boulder
Gradient Upstream: 43 Gradient Downstream: 17 Structure: CP Passage required: No Timing Dates: N/A

E.) M.P. 2.145 AHMU: Class III Channel Type: HC5 Channel Bedwidth: 6.5' Substrate: Boulder Cobble
Gradient Upstream: 13 Gradient Downstream: 17 Structure: CP Passage required: No Timing Dates: N/A

F.) M.P. 2.257 AHMU: Class III Channel Type: HC2 Channel Bedwidth: 2.3' Substrate: Boulder Cobble
Gradient Upstream: 6 Gradient Downstream: 6 Structure: CP Passage required: No Timing Dates: N/A

G.) M.P. 3.074 AHMU: Class III Channel Type: HC5 Channel Bedwidth: 7.5' Substrate: Bedrock Boulder
Gradient Upstream: 19 Gradient Downstream: 18 Structure: CP Passage required: No Timing Dates: N/A

Licking Creek Road Card
Road 8444 (8444000) - Reconstruction



Road Management Objectives

Project/EIS Licking Creek	System Licking Creek	Land Use Designation TP
Route No. 8444000-Reconstruction		Status Reconstruction
Begin Kilometer Post Reconstruction begins at the end the existing road portion requiring only maintenance at Kilometer Post 5.055	Length [kilometers (miles)] 0.477 km (0.29 mi)	Begin Termini (Kilometer Post) 5.055 End Termini (Kilometer Post) 5.532

General Design Criteria and Elements

Functional Class	Service Life	Traffic Service Level	Surface	Width	Critical Vehicle	Design Vehicle	Design Speed
C	LI	D	Rock	4.3 m	Log truck	Pickup truck	25 kph

Intended Purpose/Future Use: Use includes silvicultural activities.

Maintenance Criteria

Operational Maintenance Level: 2

Objective Maintenance Level: 2

Maintenance Narrative: Road requires 0.477 kilometers of reconstruction to enable the road to be placed in status for silvicultural activities. This will require the replacement of culverts and other drainage structures, the reestablishment of the road prism and brushing to allow sight distance. The beginning 5.055 kilometers (see road card for existing Road 8444000) of road will have light maintenance done to facilitate silvicultural activities. This will consist of light brushing and blading to achieve the road prism.

Operation Criteria

Highway Safety Act: No

Jurisdiction: National Forest System

AFRPR Status: Open

Travel Management Strategies:

Encourage:	NA
Accept:	High-clearance vehicles
Discourage:	NA
Prohibit:	NA
Eliminate	NA

Travel Management Narrative: Road will have light maintenance done over a portion of the road and heavy reconstruction done to the remainder of the road to prevent resource damage and protect natural resources. At the termination of silvicultural activities, the road will be maintained for administrative vehicles. Road will have maintenance on a scheduled time frame to preserve the resources accessed by this road. Bridge will be installed and remain through current 10-year action plan for timber sales, unless approved for removal by District Ranger.

District Ranger Approval (signature): _____ **Date:** _____

Road Management Objectives

Site-Specific Design Criteria

Road No. 8444000-R

Road Location: There are 0.48 kilometers (0.29 miles) of this road currently closed, having been placed in storage. The road location will remain within the footprint of its present location. The road will require extensive reconstruction. This reconstruction will consist of placing drainage structures in all AHMU classes of streams. Those streams that require timing will have drainage structures placed between June 7 and August 15. Sufficient cross drains will be placed to prevent erosion or sediments entering streams. Ditchlines will be excavated, additional borrow excavation placed, and any needed brushing done to reestablish the road prism.

Wetlands: Although extensive road reconstruction within wetlands is required along southern portions of 8444000-R, no additional wetlands will be impacted (BMP 12.5).

Erosion Control: An erosion control plan for maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMPs 12.17 and 14.8). This is road reconstruction. The recommendations referred to in the Resource Information, BMPs 12.5, 12.17, and 14.8, are to be followed. In addition, during reconstruction, Controlled Excavation and Side Cast (BMP 14.12) and Drainage Control Structures to Minimize Erosion and Sedimentation (BMP 14.9) will be followed. When required, drainage structure will be placed during the restricted timing as per Timing Restrictions for Construction Activities/Fisheries Prescriptions (BMP 14.6).

Rock Pits: Rock pits will be located for the most economical haul and least impacts to other resources. Rock pits will be approximately 1 mile apart; specific locations will be determined during final road layout.

Resource Information (If applicable):

Timber/Logging: No resource concerns were identified.

Soils/Water: Provide cross drains where needed to provide for the passage of surface water and aquatic organisms (BMP 12.5). Erosion control seeding of cutbanks and fill slopes should be implemented as soon as possible following reconstruction (BMPs 12.17 and 14.8).

Silviculture: Keep road open following harvest to ensure access to units until they are certified as stocked, as required by NFMA, and to keep other potential silvicultural activities, such as thinning, viable.

Wildlife/Botany: No resource concerns were identified.

Lands/Minerals/Geology/Karst: No resource concerns were identified.

Recreation/Scenery: No resource concerns were identified.

Heritage Resources: No resource concerns were identified.

Road Management Objectives

Stream Crossings

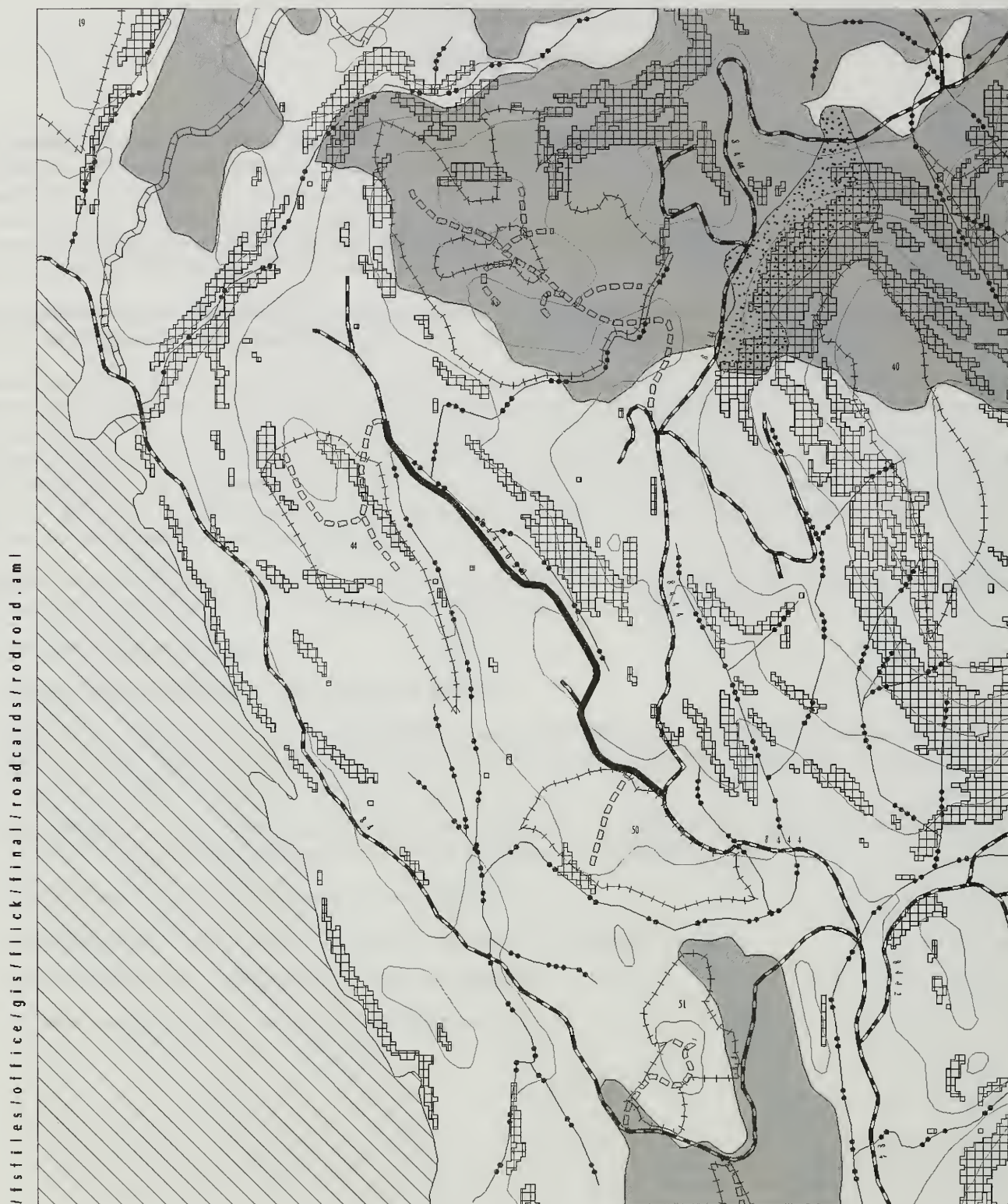
Road No. 8444000-R

A.) M.P. 3.151 AHMU: Class II Channel Type: MM2 Channel Bedwidth: 42.6' Substrate: Boulder Cobble
Gradient Upstream: 4 Gradient Downstream: 3 Structure: Removed Bridge Passage required: Yes Timing
Dates: 7 June – 14 August.

B.) M.P. 3.366 AHMU: Class IV Channel Type: HC2 Channel Bedwidth: 1.8' Substrate: Cobble, Gravel
Gradient Upstream: 20 Gradient Downstream: 15 Structure: CP Passage required: No Timing Dates: N/A

C.) M.P. 3.451 AHMU: Class III Channel Type: HC2 Channel Bedwidth: 6.5' Substrate: Cobble Gravel
Gradient Upstream: 14 Gradient Downstream: 17 Structure: CP Passage required: No Timing Dates: N/A

Licking Creek Road Card
Road 8444050 – Existing



- Class I Stream
- Class II Stream
- Class III Stream
- Class IV Stream
- ++++ ROD Unit Boundary
- Existing Road
- NEPA Cleared Road
- Reconstruct Existing Road
- Project Road

- Selected Road Segment
- Wetland
- MM-Haz 4 Soil
- Potential Slopes GT 65%
- Fresh or Salt Water



Status - Existing
Contour Interval 200 feet
Mapscale 1:15183
June 12, 2003

0 .2 .4 Miles

Note: Compiled from various digital geographic data.
This map may not meet National Map accuracy standards.

Road Management Objectives

Project/EIS Licking Creek	System Licking Creek	Land Use Designation TP		
Route No. 8444050		Status Existing		
Begin Kilometer Post Road begins at intersection with Road 8444000 at Kilometer Post 0.471	Length [kilometers (miles)] 1.304 km (0.81 mi)	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">Begin Termini (Kilometer Post) 0.000</td> <td style="width: 50%;">End Termini (Kilometer Post) 1.304</td> </tr> </table>	Begin Termini (Kilometer Post) 0.000	End Termini (Kilometer Post) 1.304
Begin Termini (Kilometer Post) 0.000	End Termini (Kilometer Post) 1.304			

General Design Criteria and Elements

Functional Class	Service Life	Traffic Service Level	Surface	Width	Critical Vehicle	Design Vehicle	Design Speed
L	LI	D	Rock	4.3 m	Lowboy	Log truck	15 kph

Intended Purpose/Future Use: Use includes silvicultural activities.

Maintenance Criteria

Operational Maintenance Level: 2

Objective Maintenance Level: 1

Maintenance Narrative:

Operation Criteria

Highway Safety Act: No

Jurisdiction: National Forest System

AFRPR Status: Closed

Travel Management Strategies:

Encourage:	NA
Accept:	Hikers, bicycles, ORVs
Discourage:	NA
Prohibit:	NA
Eliminate	Vehicle traffic

Travel Management Narrative: Remove all drainage structures upon completion of silvicultural activities. Water bar and grass seed entire roadway.

District Ranger Approval (signature): _____ **Date:** _____

Road Management Objectives

Site-Specific Design Criteria

Road No. 8444050

Road Location: This is existing road--prior to use on this project, road will require brushing, replacement of drainage structures, and reestablishment of road prism.

Wetlands: Existing road does not cross wetlands.

Erosion Control: An erosion control plan for maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMPs 12.17 and 14.8). This is road reconstruction. The recommendations referred to in the Resource Information, BMPs 12.5, 12.17, and 14.8, are to be followed. In addition, during reconstruction, Controlled Excavation and Side Cast (BMP 14.12) and Drainage Control Structures to Minimize Erosion and Sedimentation (BMP 14.9) will be followed.

Rock Pits: Existing rock pits are located for the most economical haul and the least impacts to other resources.

Resource Information (If applicable):

Timber/Logging: No resource concerns were identified.

Soils/Water: Avoid the placement of fill material or the side casting of waste material into wetlands or on steep, potentially unstable slopes (BMPs 14.7 and 14.9). Provide cross drains where needed to provide for the passage of surface water and aquatic organisms (BMP 12.5). Erosion control seeding of cutbanks and fill slopes should be implemented as soon as possible following construction (BMPs 12.17 and 14.8).

Silviculture: Maintaining the road as open is not necessary to fulfill silvicultural needs.

Wildlife/Botany: No resource concerns were identified.

Lands/Minerals/Geology/Karst: No resource concerns were identified. No quarry shall be developed on top of karst without adequate site survey and design. Roads shall, to the extent feasible, avoid sinkholes and other collapse features and losing streams. Roads should not divert water to or from karst features. Measures shall be taken to reduce erosion and sediment transport from the road surface and cutslopes. Sediment traps, cut and fill slope revegetation, and road closure and revegetation may be appropriate.

Recreation/Scenery: No resource concerns were identified.

Heritage Resources: No resource concerns were identified.

Road Management Objectives

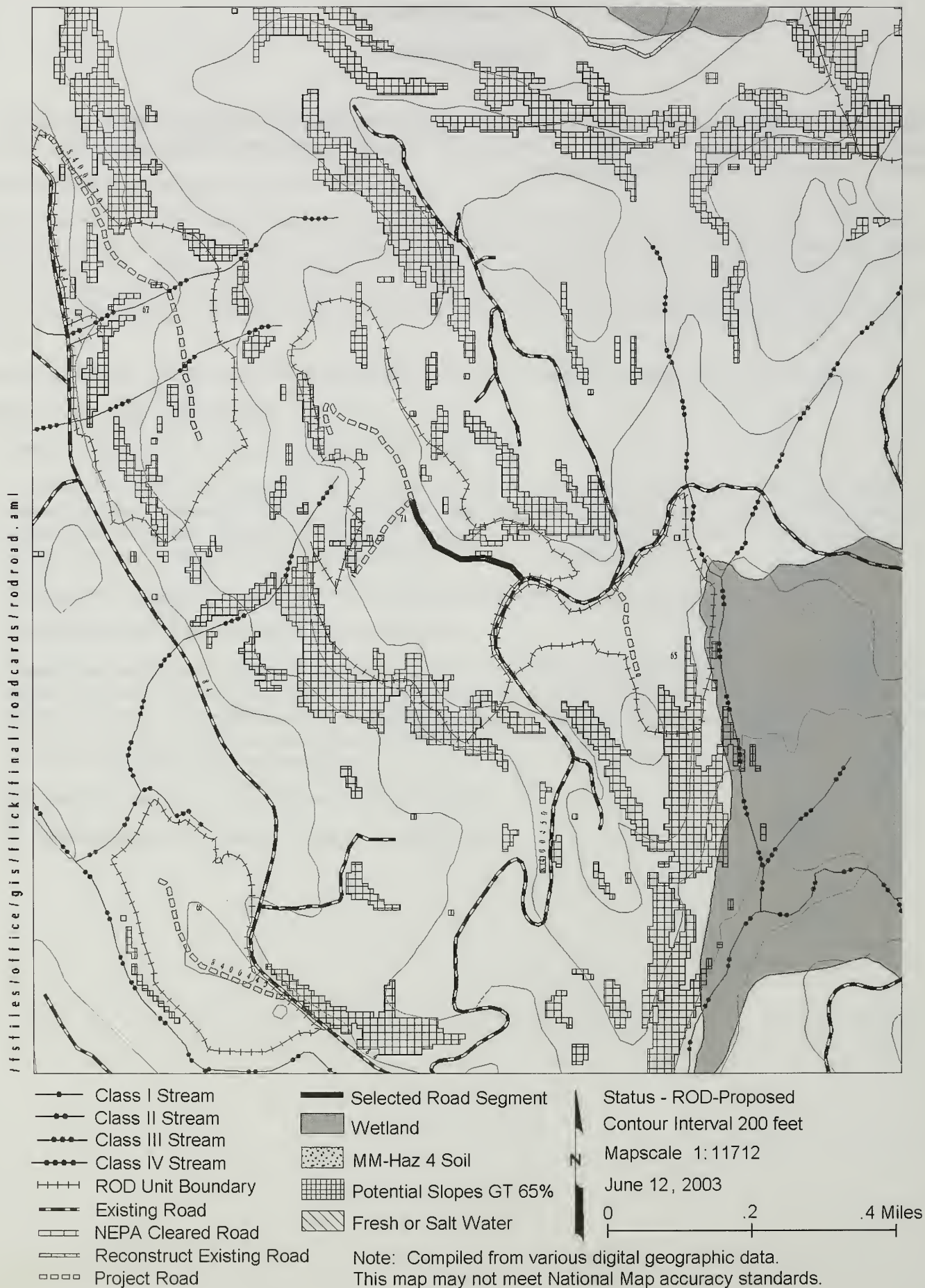
Stream Crossings

Road No. 8444050

A.) **M.P. 0.749** AHMU: Class III Channel Type: MM1 Channel Bedwidth: 6.5' Substrate: Bedrock Boulder
Gradient Upstream: 7 Gradient Downstream: 1 Structure: CP Passage required: No Timing Dates: N/A

Narrative: Existing culvert appears to be undersized.

Licking Creek Road Card Road 8444051 - Proposed



Road Management Objectives

Project/EIS Licking Creek Route No. 8444051 Begin Kilometer Post 0.000 Road 8444051 begins at Kilometer Post 1.215 of the 8444000 Road	System Licking Creek Length [kilometers (miles)] 0.596 km (0.37 mi)	Land Use Designation ML Status New Construction Begin Termini (Kilometer Post) 0.000 End Termini (Kilometer Post) 0.596
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General Design Criteria and Elements

Functional Class	Service Life	Traffic Service Level	Surface	Width	Critical Vehicle	Design Vehicle	Design Speed
L	LI	D	Rock	4.3 m	Log truck	Log truck	15 kph

Intended Purpose/Future Use: Use includes silvicultural activities.

Maintenance Criteria

Operational Maintenance Level: 2

Objective Maintenance Level: 1

Maintenance Narrative:

Operation Criteria

Highway Safety Act: No

Jurisdiction: National Forest System

AFRPR Status: Closed

Travel Management Strategies:

Encourage:	NA
Accept:	Hikers, bicycles, ORVs
Discourage:	NA
Prohibit:	NA
Eliminate	Vehicle traffic

Travel Management Narrative: Remove all drainage structures upon completion of silvicultural activities. Water bar and grass seed entire roadway.

District Ranger Approval (signature): _____ **Date:** _____

Road Management Objectives

Site-Specific Design Criteria

Road No. 8444051

Road Location: Road accesses Unit 44. It begins at the terminus of Road 8444050, an existing road. The beginning of the road is through the existing harvested unit. The road is located to accommodate logging systems and still have the least impact on other resources. Road construction is moderate to easy. If steep sideslopes greater than 67 percent are found, then excavation will be end hauled. The road follows a contour around a knob and ends at the landing from which the remaining timber can be harvested.

Wetlands: No crossing of wetlands is anticipated. Should wetland areas be identified during final layout, the road will be modified to avoid or minimize effects on wetlands, and appropriate standards will be applied.

Erosion Control: An erosion control plan for construction and maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMPs 12.17 and 14.8). This is new road construction. The recommendations referred to in the Resource Information, BMPs 12.5, 12.17, and 14.8, are to be followed. In addition, during construction, Controlled Excavation and Side Cast (BMP 14.12) and Drainage Control Structures to Minimize Erosion and Sedimentation (BMP 14.9) will be followed.

Rock Pits: Rock pits will be located for the most economical haul and least impacts to other resources. Rock pits will be approximately 1 mile apart; specific locations will be determined during final road layout.

Resource Information (If applicable):

Timber/Logging: No resource concerns were identified.

Soils/Water: Avoid the placement of fill material or the side casting of waste material into wetlands or on steep, potentially unstable slopes (BMPs 14.7 and 14.9). Provide cross drains where needed to provide for the passage of surface water and aquatic organisms (BMP 12.5). Erosion control seeding of cutbanks and fill slopes should be implemented as soon as possible following construction (BMPs 12.17 and 14.8).

Silviculture: Maintaining the road as open is not necessary to fulfill silvicultural needs.

Wildlife/Botany: No resource concerns were identified.

Lands/Minerals/Geology/Karst: No resource concerns were identified.

Recreation/Scenery: Where end of road faces Carroll Inlet in Unit 44, avoid side casting of rock on downhill slopes.

Heritage Resources: No resource concerns were identified.

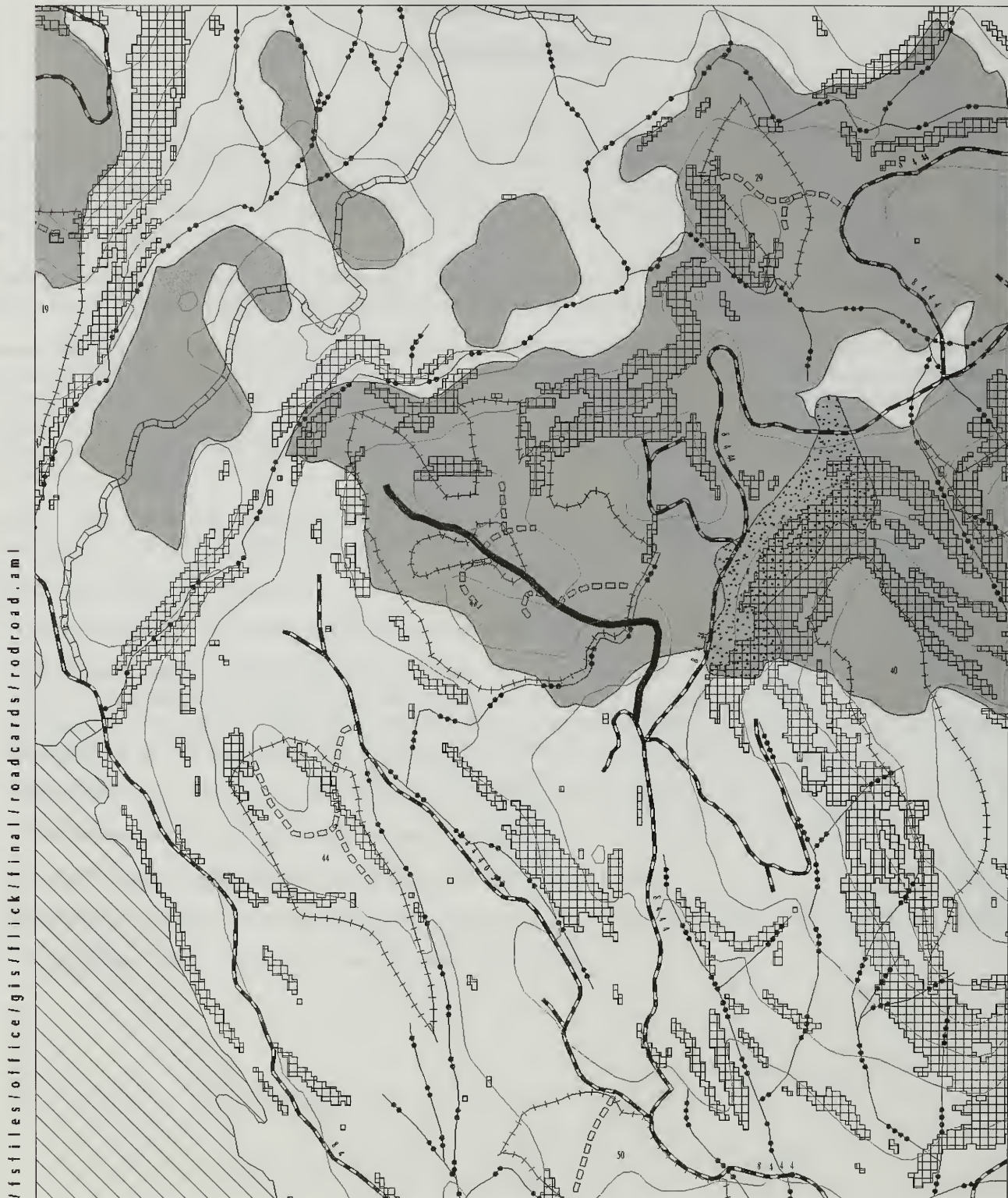
Road Management Objectives

Stream Crossings

Road No. 8444051

No streams are crossed on this location.

Licking Creek Road Card Road 8444060 - Proposed



- | | |
|-----------------------------|---------------------------|
| —●— Class I Stream | — Selected Road Segment |
| —●●— Class II Stream | ■ Wetland |
| —●●●— Class III Stream | ▨ MM-Haz 4 Soil |
| —●●●●— Class IV Stream | ▩ Potential Slopes GT 65% |
| —+—+— ROD Unit Boundary | ▨ Fresh or Salt Water |
| — Existing Road | |
| — NEPA Cleared Road | |
| — Reconstruct Existing Road | |
| — Project Road | |

Status - ROD-Proposed

Contour Interval 200 feet

Mapscale 1:14446

June 12, 2003

0 .2 .4 Miles

Note: Compiled from various digital geographic data.
This map may not meet National Map accuracy standards.

Road Management Objectives

Project/EIS Licking Creek Route No. 8444060 Begin Kilometer Post Road 8444060 begins at the intersection with Road 8444000 Kilometer Post 1.070.	System Licking Creek Length [kilometers (miles)] 1.095 km (0.68 mi)	Land Use Designation ML Status New Construction Begin Termini (Kilometer Post) 0.000 End Termini (Kilometer Post) 1.095 km
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General Design Criteria and Elements

Functional Class	Service Life	Traffic Service Level	Surface	Width	Critical Vehicle	Design Vehicle	Design Speed
L	LI	D	Rock	4.3 m	Log truck	Log truck	15 kph

Intended Purpose/Future Use: Use includes silvicultural activities.

Maintenance Criteria

Operational Maintenance Level: 2

Objective Maintenance Level: 1

Maintenance Narrative:

Operation Criteria

Highway Safety Act: No

Jurisdiction: National Forest System

AFRPR Status: Closed

Travel Management Strategies:

Encourage:	NA
Accept:	Hikers, bicycles, ORVs
Discourage:	NA
Prohibit:	NA
Eliminate	Vehicle traffic

Travel Management Narrative: Remove all drainage structures upon completion of silvicultural activities. Water bar and grass seed entire roadway.

District Ranger Approval (signature): _____ **Date:** _____

Road Management Objectives

Site-Specific Design Criteria

Road No. 8444060

Road Location: Road accesses Unit 43 and begins in previously harvested area at the end of a previously constructed spur. Road construction is moderate to easy and is located to facilitate harvesting and logging operations. There are no sections of road that cross slopes greater than 67 percent. Road crosses muskeg wetland in the center of Unit 43.

Wetlands: Use overlay road construction on wetlands and minimize side ditching, where practicable, to minimize the effects upon groundwater flow (BMP 14.3). Avoid the placement of fill material or the side casting of waste material in wetlands (BMP 14.19).

Erosion Control: An erosion control plan for construction and maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMPs 12.17 and 14.8). This is new road construction. The recommendations referred to in the Resource Information, BMPs 12.5, 12.17, and 14.8, are to be followed. In addition, during construction, Controlled Excavation and Side Cast (BMP 14.12) and Drainage Control Structures to Minimize Erosion and Sedimentation (BMP 14.9) will be followed.

Rock Pits: Rock pits will be located for the most economical haul and least impacts to other resources. Rock pits will be approximately 1 mile apart; specific locations will be determined during final road layout.

Resource Information (If applicable):

Timber/Logging: No resource concerns were identified.

Soils/Water: Avoid the placement of fill material or the side casting of waste material into wetlands or on steep, potentially unstable slopes (BMPs 14.7 and 14.9). Provide cross drains where needed to provide for the passage of surface water and aquatic organisms (BMP 12.5). Erosion control seeding of cutbanks and fill slopes should be implemented as soon as possible following construction (BMPs 12.17 and 14.8).

Silviculture: Maintaining the road as open is not necessary to fulfill silvicultural needs.

Wildlife/Botany: No resource concerns were identified.

Lands/Minerals/Geology/Karst: No resource concerns were identified. No quarry shall be developed on top of karst without adequate site survey and design. Roads shall, to the extent feasible, avoid sinkholes and other collapse features and losing streams. Roads should not divert water to or from karst features. Measures shall be taken to reduce erosion and sediment transport from the road surface and cutslopes. Sediment traps, cut and fill slope revegetation, and road closure and revegetation may be appropriate.

Recreation/Scenery: No resource concerns were identified.

Heritage Resources: No resource concerns were identified.

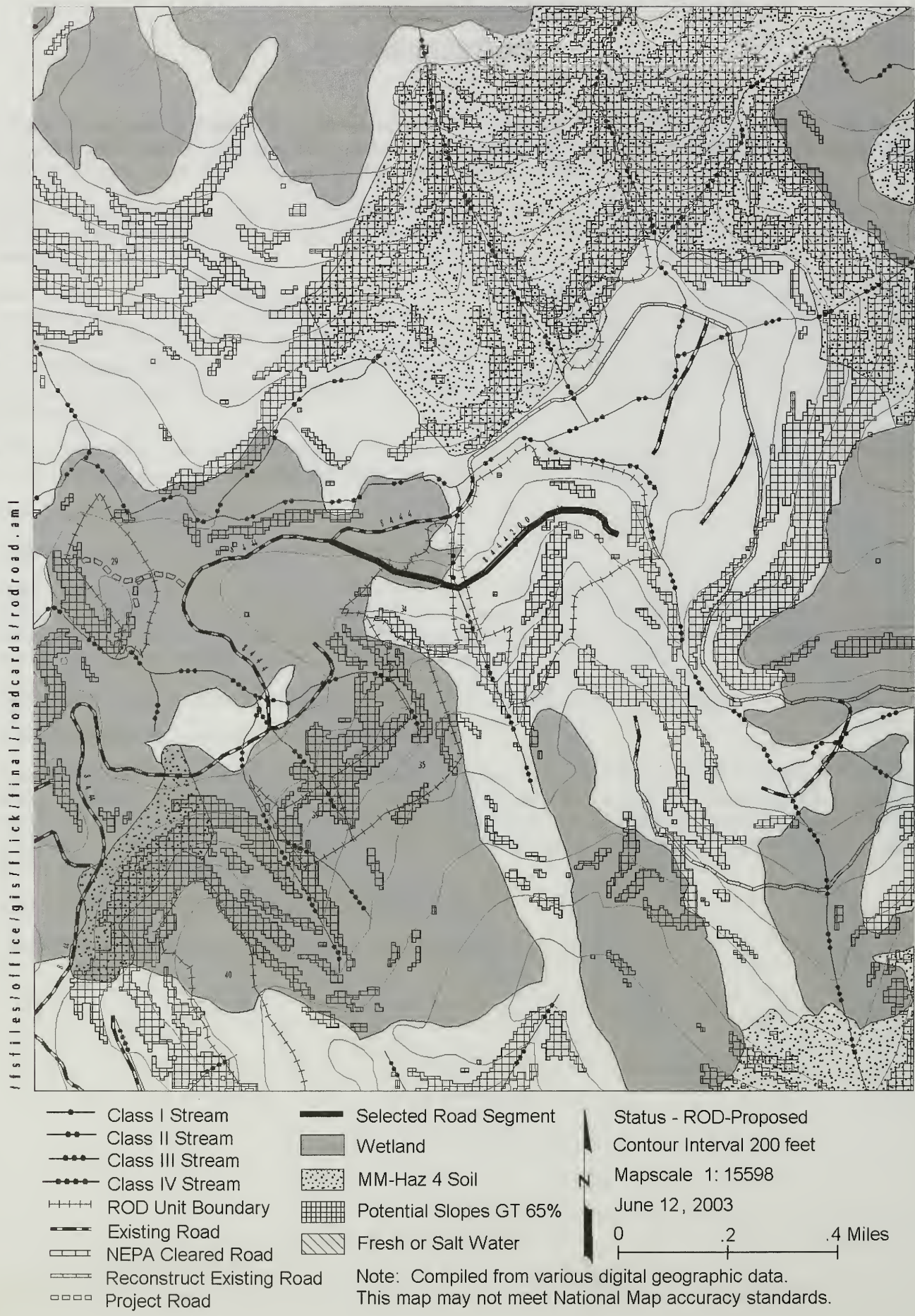
Road Management Objectives

Stream Crossings

Road No. 8444060

A.) **M.P. 0.188** AHMU: Class III Channel Type: HC5 Channel Bedwidth: 5.1' Substrate: Bedrock Boulder
Gradient Upstream: 16 Gradient Downstream: 18 Structure: CP Passage required: No Timing Dates: N/A

Licking Creek Road Card
Road 8444200 - Proposed



Road Management Objectives

Project/EIS Licking Creek	System Licking Creek	Land Use Designation ML
Route No. 8444200		Status New Construction
Begin Kilometer Post Road 8444200 begins at an intersection with Road 8444000 Kilometer Post 5.128.	Length [kilometers (miles)] 0.982 km (0.61 mi)	Begin Termini (Kilometer Post) 0.000
		End Termini (Kilometer Post) 0.982

General Design Criteria and Elements

Functional Class	Service Life	Traffic Service Level	Surface	Width	Critical Vehicle	Design Vehicle	Design Speed
L	LI	D	Rock	4.3 m	Lowboy	Log truck	15 kph

Intended Purpose/Future Use: Use includes silvicultural activities.

Maintenance Criteria

Operational Maintenance Level: 2

Objective Maintenance Level: 1

Maintenance Narrative:

Operation Criteria

Highway Safety Act: No

Jurisdiction: National Forest System

AFRPR Status: Closed

Travel Management Strategies:

Encourage:	NA
Accept:	Hikers, bicycles, ORVs
Discourage:	NA
Prohibit:	NA
Eliminate	Vehicle traffic

Travel Management Narrative: Remove all drainage structures upon completion of silvicultural activities. Water bar and grass seed entire roadway.

District Ranger Approval (signature): _____ **Date:** _____

Road Management Objectives

Site-Specific Design Criteria

Road No. 8444200

Road Location: Road accesses Units 34 and 31. The road leaves the existing road such that it can cross the drainage at a favorable location and then climbs at 15 percent to reach a control point. Road continues around the contour to reach a landing required for timber harvest. Road stays below steep sections to limit the need to excavate for the road prism. Some end haul of excavated materials may be needed in Unit 31 near terminus of the road as slopes approach 65 percent.

Wetlands: The western one third of this road will cross wetlands. Use overlay road construction on wetlands and minimize side ditching, where practicable, to minimize the effects upon groundwater flow (BMP 14.3). Avoid the placement of fill material or the side casting of waste material in wetlands (BMP 14.19).

Erosion Control: An erosion control plan for construction and maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMPs 12.17 and 14.8). This is new road construction. The recommendations referred to in the Resource Information, BMPs 12.5, 12.17, and 14.8, are to be followed. In addition, during construction, Controlled Excavation and Side Cast (BMP 14.12) and Drainage Control Structures to Minimize Erosion and Sedimentation (BMP 14.9) will be followed.

Rock Pits: Rock pits will be located for the most economical haul and least impacts to other resources. Rock pits will be approximately 1 mile apart; specific locations will be determined during final road layout.

Resource Information (If applicable):

Timber/Logging: No resource concerns were identified.

Soils/Water: Avoid the placement of fill material or the side casting of waste material into wetlands or on steep, potentially unstable slopes (BMPs 14.7 and 14.9). Provide cross drains where needed to provide for the passage of surface water and aquatic organisms (BMP 12.5). Erosion control seeding of cutbanks and fill slopes should be implemented as soon as possible following construction (BMPs 12.17 and 14.8).

Silviculture: Maintaining the road as open is not necessary to fulfill silvicultural needs.

Wildlife/Botany: No resource concerns were identified.

Lands/Minerals/Geology/Karst: No resource concerns were identified. No quarry shall be developed on top of karst without adequate site survey and design. Roads shall, to the extent feasible, avoid sinkholes and other collapse features and losing streams. Roads should not divert water to or from karst features. Measures shall be taken to reduce erosion and sediment transport from the road surface and cutslopes. Sediment traps, cut and fill slope revegetation, and road closure and revegetation may be appropriate.

Recreation/Scenery: No resource concerns were identified.

Heritage Resources: No resource concerns were identified.

Road Management Objectives

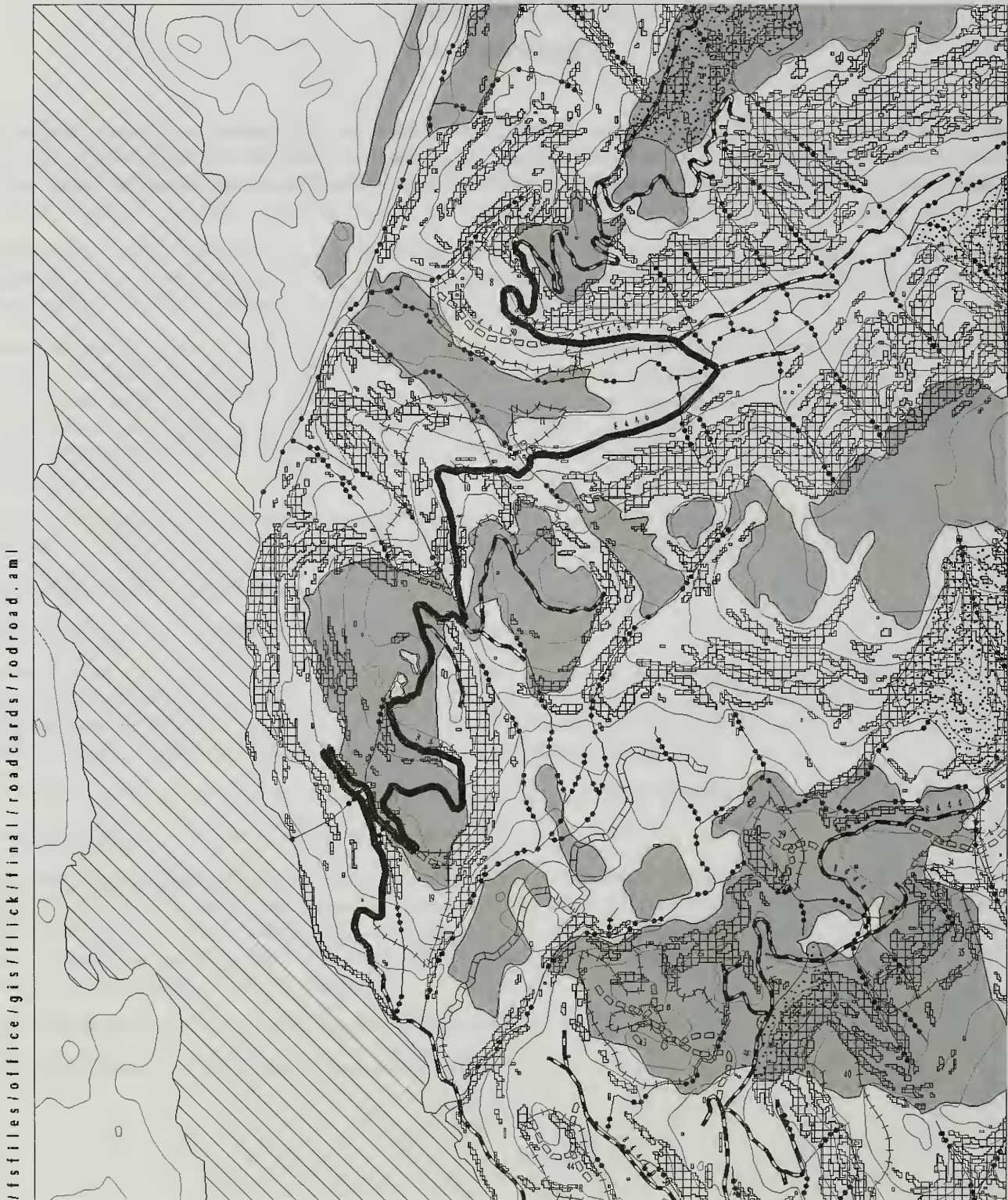
Stream Crossings

Road No. 8444200

A.) **M.P. 0.245** AHMU: Class III Channel Type: HC6 Channel Bedwidth: 7.2' Substrate: Bedrock Boulder
Gradient Upstream: 18 Gradient Downstream: 15 Structure: CP Passage required: No Timing Dates: N/A

Narrative: The stream crossing is located immediately above fish habitat and may require more than 10 ft. of fill.

Licking Creek Road Card
Road 8446 (8446000) – Existing



/sfiles/office/gis/flick/final/roadcards/roadcard.aml

- Class I Stream
- Class II Stream
- Class III Stream
- Class IV Stream
- ROD Unit Boundary
- Existing Road
- NEPA Cleared Road
- Reconstruct Existing Road
- Project Road

- Selected Road Segment
- Wetland
- MM-Haz 4 Soil
- Potential Slopes GT 65%
- Fresh or Salt Water

Status - Existing
Contour Interval 200 feet
Mapscale 1:29592
June 12, 2003
0 .2 .4 Miles

Note: Compiled from various digital geographic data.
This map may not meet National Map accuracy standards.

Road Management Objectives

Project/EIS Licking Creek	System Licking Creek	Land Use Designation TP
Route No. 8446000		Status Existing
Begin Kilometer Post Road 8446000 intersects Road 8400000 at Kilometer Post 61.05	Length [kilometers (miles)] 8.86 km (5.50 mi)	Begin Termini (Kilometer Post) 0.000
		End Termini (Kilometer Post) 8.86

General Design Criteria and Elements

Functional Class	Service Life	Traffic Service Level	Surface	Width	Critical Vehicle	Design Vehicle	Design Speed
C	Short Term	D	Rock	4.3 m	Lowboy	Log truck	15 kph

Intended Purpose/Future Use: Use includes silvicultural activities.

Maintenance Criteria

Operational Maintenance Level: 2

Objective Maintenance Level: 2

Maintenance Narrative:

Operation Criteria

Highway Safety Act: No

Jurisdiction: National Forest System

AFRPR Status: Open

Travel Management Strategies:

Encourage:	NA
Accept:	High-clearance vehicles
Discourage:	NA
Prohibit:	NA
Eliminate	NA

Travel Management Narrative: Road will remain open for Forest Service administrative activities. Road will have maintenance on a scheduled time frame to preserve the resources accessed by this road.

District Ranger Approval (signature): _____ **Date:** _____

Road Management Objectives

Site-Specific Design Criteria

Road No. 8446000

Road Location: This is an existing road. The road is presently grown over with alder and will require brushing. Road is calving off in places and will require replacement of borrow excavation. Slides have occurred in past years and will require removal. Road will require prism reestablishment, ditchline cleaning, and seeding. Road reconstruction will address all soils/water concerns.

Wetlands: Road management along existing Road 8446000 that crosses wetlands and requires road maintenance will not further impact wetlands and will not change the existing footprint.

Erosion Control: An erosion control plan for maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during maintenance shall be grass seeded and fertilized (BMPs 12.17 and 14.8). This is an existing road needing pre-haul maintenance. The recommendations referred to in the Resource Information, BMPs 12.5, 12.17, and 14.8, are to be followed. In addition, during reconstruction, Controlled Excavation and Side Cast (BMP 14.12) and Drainage Control Structures to Minimize Erosion and Sedimentation (BMP 14.9) will be followed.

Rock Pits: Existing rock pits will be used for the most economical haul and least impacts to other resources.

Resource Information (If applicable):

Timber/Logging: No resource concerns were identified.

Soils/Water: Pre-haul maintenance will correct the following conditions. Ditch is plugged with limbs/slash/snags/rootwad/blowdown at Mileposts 0.32, 1.13, 3.01, 3.43, 3.66, and 5.33. Rockslides are plugging ditch at Mileposts 0.90, 1.15, 1.45, and 2.06. There is a shallow ditch at Mileposts 0.37, 1.5, 2.3, 5.07 and 5.43. Slides are blocking at least some portion of the road at Mileposts 2.04, 2.75, 3.51, 3.74, and 5.00. Small slides exist at Milepost 3.53. Erosion control seeding of cutbanks and fill slopes should be implemented as soon as possible following reconstruction (BMPs 12.17 and 14.8).

Silviculture: Keep road open to ensure access to units until they are certified as stocked as required by NFMA.

Wildlife/Botany: No resource concerns were identified.

Lands/Minerals/Geology/Karst: No resource concerns were identified. No quarry shall be developed on top of karst without adequate site survey and design. Roads shall, to the extent feasible, avoid sinkholes and other collapse features and losing streams. Roads should not divert water to or from karst features. Measures shall be taken to reduce erosion and sediment transport from the road surface and cutslopes. Sediment traps, cut and fill slope revegetation, and road closure and revegetation may be appropriate.

Recreation/Scenery: No resource concerns were identified.

Heritage Resources: No resource concerns were identified.

Road Management Objectives

Stream Crossings

Road No. 8446000

A.) M.P. .0662 AHMU: Class III Channel Type: HC5 Channel Bedwidth: 7.8' Substrate: Boulder Cobble
Gradient Upstream: 65 Gradient Downstream: 44 Structure: CP Passage required: No Timing Dates: N/A

B.) M.P. 1.026 AHMU: Class IV Channel Type: HC5 Channel Bedwidth: 7.0' Substrate: Boulder Cobble
Gradient Upstream: 41 Gradient Downstream: 65 Structure: CP Passage required: No Timing Dates: N/A

C.) M.P. 1.210 AHMU: Class IV Channel Type: HC5 Channel Bedwidth: 5.4' Substrate: Cobble Bedrock
Gradient Upstream: 55 Gradient Downstream: 61 Structure: CP Passage required: No Timing Dates: N/A

D.) M.P. 1.400 AHMU: Class III Channel Type: HC5 Channel Bedwidth: 4.5' Substrate: Bedrock
Gradient Upstream: 55 Gradient Downstream: 95 Structure: CP Passage required: No Timing Dates: N/A

E.) M.P. 3.467 AHMU: Class IV Channel Type: HC5 Channel Bedwidth: 1.8' Substrate: Bedrock
Gradient Upstream: 50 Gradient Downstream: 44 Structure: CP Passage required: No Timing Dates: N/A

F.) M.P. 3.608 AHMU: Class III Channel Type: HC5 Channel Bedwidth: 2.8' Substrate: Bedrock
Gradient Upstream: 33 Gradient Downstream: 35 Structure: CP Passage required: No Timing Dates: N/A

G.) M.P. 3.624 AHMU: Class III Channel Type: HC5 Channel Bedwidth: 2.8' Substrate: Bedrock
Gradient Upstream: 36 Gradient Downstream: 40 Structure: CP Passage required: No Timing Dates: N/A

H.) M.P. 3.652 AHMU: Class III Channel Type: HC5 Channel Bedwidth: 2.5' Substrate: Bedrock
Gradient Upstream: 38 Gradient Downstream: 44 Structure: CP Passage required: No Timing Dates: N/A

I.) M.P. 3.835 AHMU: Class IV Channel Type: HC5 Channel Bedwidth: 2.0' Substrate: Boulder Cobble
Gradient Upstream: 50 Gradient Downstream: 55 Structure: CP Passage required: No Timing Dates: N/A

J.) M.P. 4.008 AHMU: Class IV Channel Type: HC5 Channel Bedwidth: 2.8' Substrate: Boulder Gravel
Gradient Upstream: 75 Gradient Downstream: 42 Structure: CP Passage required: No Timing Dates: N/A

K.) M.P. 4.043 AHMU: Class IV Channel Type: HC5 Channel Bedwidth: 2.5' Substrate: Boulder Cobble
Gradient Upstream: 62 Gradient Downstream: 36 Structure: CP Passage required: No Timing Dates: N/A

L.) M.P. 4.110 AHMU: Class IV Channel Type: HC5 Channel Bedwidth: 1.5' Substrate: Gravel Cobble
Gradient Upstream: 54 Gradient Downstream: 42 Structure: CP Passage required: No Timing Dates: N/A

M.) M.P. 4.163 AHMU: Class IV Channel Type: HC5 Channel Bedwidth: 2.5' Substrate: Boulder Cobble
Gradient Upstream: 37 Gradient Downstream: 38 Structure: CP Passage required: No Timing Dates: N/A

N.) M.P. 4.318 AHMU: Class IV Channel Type: HC5 Channel Bedwidth: 2.1' Substrate: Cobble Gravel
Gradient Upstream: 42 Gradient Downstream: 19 Structure: CP Passage required: No Timing Dates: N/A

O.) M.P. 4.384 AHMU: Class II Channel Type: MM1 Channel Bedwidth: 21.1' Substrate: Cobble Gravel
Gradient Upstream: 5 Gradient Downstream: 5 Structure: CP Passage required: No Timing Dates: N/A

Narrative: The Forest Service conducted an Upstream Assessment at this site in 2002; the results will be used to determine work priorities at the Forest Level.

P.) M.P. 4.415 AHMU: Class II Channel Type: MM1 Channel Bedwidth: 21.1' Substrate: Cobble Gravel
Gradient Upstream: 5 Gradient Downstream: 5 Structure: CP Passage required: No Timing Dates: N/A

Narrative: The Forest Service conducted an Upstream Assessment at this site in 2002; the results will be used to determine work priorities at the Forest Level.

Appendix 2

Q.) M.P. 4.492 AHMU: Class II Channel Type: MM1 Channel Bedwidth: 18.3' Substrate: Cobble Gravel
Gradient Upstream: 4 Gradient Downstream: 6 Structure: CP Passage required: No Timing Dates: N/A

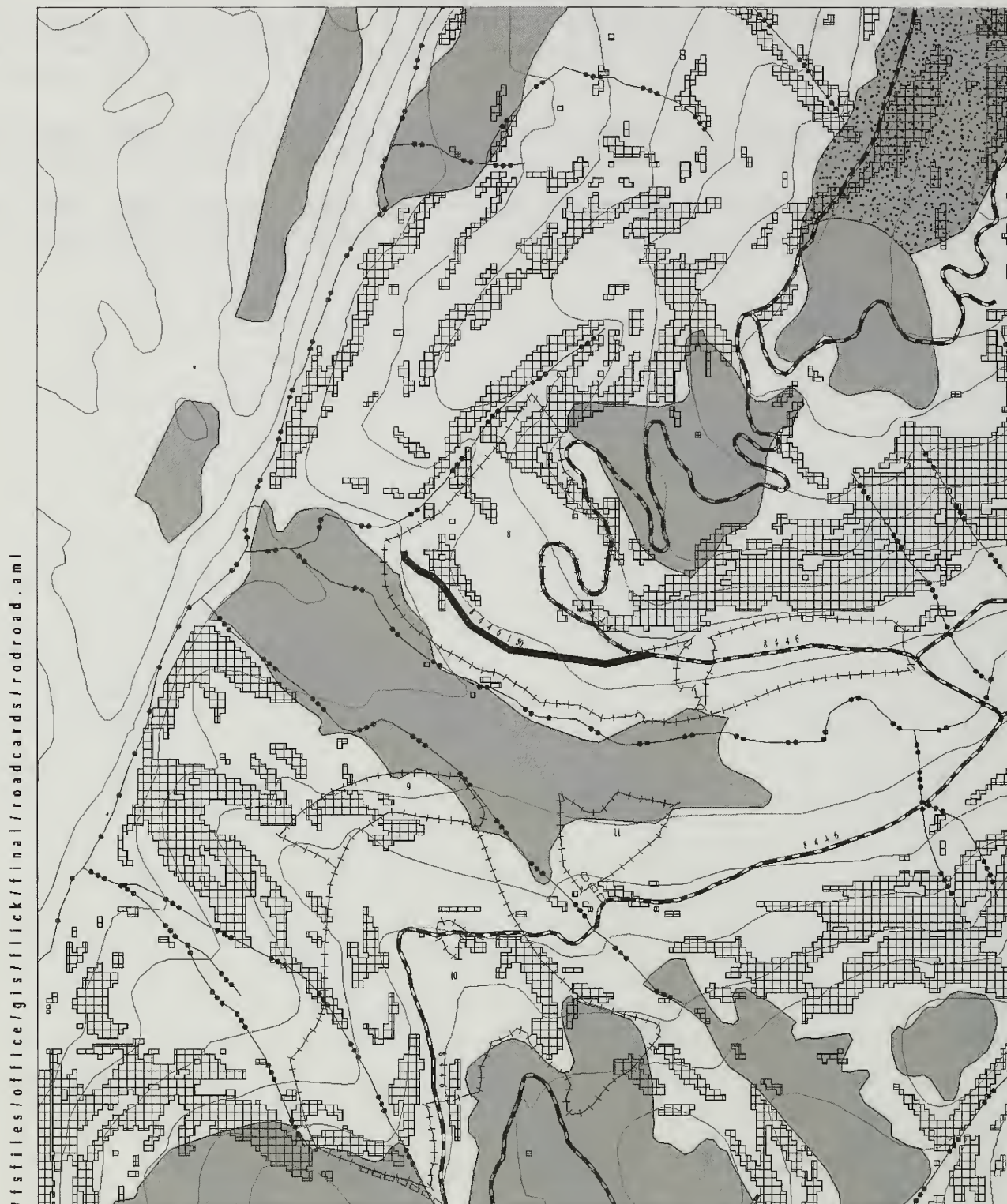
Narrative: The Forest Service conducted an Upstream Assessment at this site in 2002; the results will be used to determine work priorities at the Forest Level.

R.) M.P. 4.684 AHMU: Class IV Channel Type: HC5 Channel Bedwidth: 1.3' Substrate: Cobble Gravel
Gradient Upstream: 34 Gradient Downstream: 21 Structure: CP Passage required: No Timing Dates: N/A

S.) M.P. 4.991 AHMU: Class III Channel Type: HC5 Channel Bedwidth: 4.5' Substrate: Bedrock
Gradient Upstream: 74 Gradient Downstream: 53 Structure: CP Passage required: No Timing Dates: N/A

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Licking Creek Road Card
Road 8446150 - Proposed



- | | |
|---------------------------------|---------------------------|
| —●— Class I Stream | — Selected Road Segment |
| --- Class II Stream | ■ Wetland |
| ... Class III Stream | ▨ MM-Haz 4 Soil |
| -.-.- Class IV Stream | ▧ Potential Slopes GT 65% |
| ++++ ROD Unit Boundary | ▨ Fresh or Salt Water |
| — Existing Road | |
| --- NEPA Cleared Road | |
| -.-.- Reconstruct Existing Road | |
| ... Project Road | |

Status - ROD-Proposed
Contour Interval 200 feet

Mapscale 1:13806

June 12, 2003

0 .2 .4 Miles

Note: Compiled from various digital geographic data.
This map may not meet National Map accuracy standards.

Road Management Objectives

Project/EIS Licking Creek Route No. 8446150 Begin Kilometer Post Road begins at Kilometer Post 9.068 Road 8446000	System Licking Creek Length [kilometers (miles)] 0.673 km (0.42 mi) Begin Termini (Kilometer Post) 0.000	Land Use Designation TP Status New construction End Termini (Kilometer Post) 0.673
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General Design Criteria and Elements

Functional Class	Service Life	Traffic Service Level	Surface	Width	Critical Vehicle	Design Vehicle	Design Speed
L	LI	D	Rock	4.3 m	Log truck	Log truck	15 kph

Intended Purpose/Future Use: Use includes silvicultural activities.

Maintenance Criteria

Operational Maintenance Level: 2

Objective Maintenance Level: 1

Maintenance Narrative:

Operation Criteria

Highway Safety Act: No

Jurisdiction: National Forest System

AFRPR Status: Closed

Travel Management Strategies:

Encourage:	NA
Accept:	Hikers, bicycles, ORVs
Discourage:	NA
Prohibit:	NA
Eliminate	Vehicle traffic

Travel Management Narrative: Remove all drainage structures upon completion of silvicultural activities. Water bar and grass seed entire roadway.

District Ranger Approval (signature): _____ **Date:** _____

Road Management Objectives

Site-Specific Design Criteria

Road No. 8446150

Road Location: Road accesses Unit 8. Road is located completely within the unit and construction should be moderate over most portions of the road. Road is located to accommodate logging systems and still have the least impact on other resources. There are no sections where road location crosses steep slopes over 67 percent, but in areas where road is in rock or where full bench construction will be required, end hauling of excavated material may be warranted.

Wetlands: No crossing of wetlands is anticipated. Should wetland areas be identified during final layout, the road will be modified to avoid or minimize effects on wetlands, and appropriate standards will be applied.

Erosion Control: An erosion control plan for construction and maintenance will be developed by the contractor and approved by the Contracting Officer (BMP 14.5). All areas of organic or mineral soil exposed during construction shall be grass seeded and fertilized (BMPs 12.17 and 14.8). This is new road construction. The recommendations referred to in the Resource Information, BMPs 12.5, 12.17, and 14.8, are to be followed. In addition, during construction, Controlled Excavation and Side Cast (BMP 14.12) and Drainage Control Structures to Minimize Erosion and Sedimentation (BMP 14.9) will be followed.

Rock Pits: Rock pits will be located for the most economical haul and least impacts to other resources. Rock pits will be approximately 1 mile apart; specific locations will be determined during final road layout.

Resource Information (If applicable):

Timber/Logging: No resource concerns were identified.

Soils/Water: Avoid the placement of fill material or the side casting of waste material on steep, potentially unstable slopes (BMPs 14.7 and 14.9). Provide cross drains where needed to provide for the passage of surface water and aquatic organisms (BMP 12.5). Erosion control seeding of cutbanks and fill slopes should be implemented as soon as possible following construction (BMPs 12.17 and 14.8).

Silviculture: Maintaining the road as open is not necessary to fulfill silvicultural needs.

Wildlife/Botany: No resource concerns were identified.

Lands/Minerals/Geology/Karst: No resource concerns were identified.

Recreation/Scenery: No resource concerns were identified.

Heritage Resources: No resource concerns were identified.

Road Management Objectives

Stream Crossings

Road No. 8446150

No streams are crossed on this new road location.



Log loading at barge-accessible LTF; photo by Eric Trimble

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